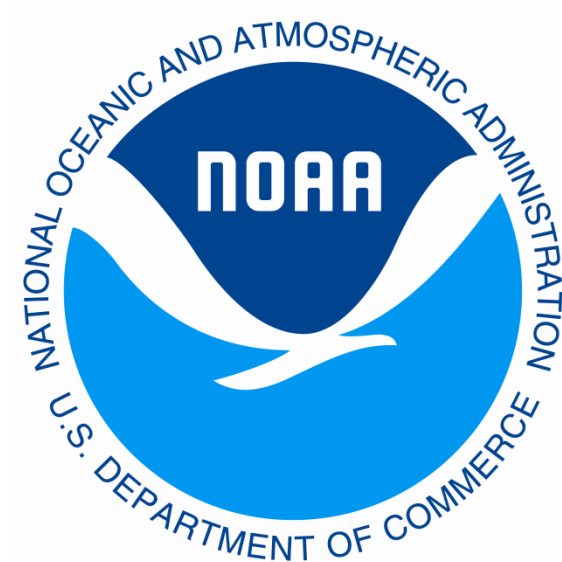


RRS SYSTEM ADMINISTRATION MANUAL

REVISION A

Major Components:

**RRS Workstation (RWS)
Telemetry Receiver System (TRS)
Signal Processing System (SPS)
Radiosonde Surface Observing Instrumentation System
(RSOIS)**



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DEPARTMENT OF COMMERCE
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FOREWORD

RRS MAINTENANCE PHILOSOPHY

The Radiosonde Replacement System (RRS) maintenance philosophy is for the field to replace Line Replacement Units (LRU) with equipment repaired by the National Reconditioning Center (NRC). Repair parts will be provided through the normal National Logistics Support Center (NLSC) requisition process.

PURPOSE OF THE MANUAL

This manual provides the procedures required by System Administrators to install and maintain RRS software and firmware for the:

- RRS Workstation (RWS) Operating System (OS) (i.e. Ghost) Software
- RWS (Build) Program Software
- RWS Offline Maintenance Suite (OMS) Software
- RWS LDAD Installation Instructions
- Telemetry Receiver System (TRS) Firmware
- Signal Processing System (SPS) Software
- Radiosonde Surface Observing Instrumentation System (RSOIS) Software

To maintain the performance of the RRS software and firmware, all RRS System Administrators will be required to perform the following duties:

- Install, upgrade, and maintain operating systems including network operating systems such as PC-NFS
- Support Users
- Apply patches and upgrades to operating systems and utilities as soon as they become available
- Install, troubleshoot, and upgrade software
- Maintain data integrity by backing up file systems
- Fix hardware or coordinate maintenance
- Purchase, install and maintain local hardware
- Install and maintain peripherals (printers, CD-RW drives, etc.)
- Administer file systems, including networked file systems
- Monitor disk usage and perform such tasks as:
 - Removing unwanted files
 - Backing up file systems
 - Implementing system failure/recovery procedures
 - Implementing user data backups and recovery
 - Reconfiguring swap space

RRS MAJOR COMPONENTS

- Telemetry Receiver System (TRS) is an integrated electromechanical device using microprocessors and software to the greatest extent possible to manage the system's operations. The TRS works on the principle of an automatic radiotheodolite.
- RRS Workstation (RWS) is off-the-shelf computer hardware, a *Windows* operating system tailored by NWS, and NWS-developed software that include a user interface based on the *Windows* model. NWS software processes radiosonde data, TRS data, and provides flight management and other data catalogue and storage capabilities via a Structured Query Language (SQL) relational database.
- Global Positioning System (GPS) radiosonde and Signal Processing System (SPS) are complementary units, designed to work together in an upper-air reporting system. Radiosondes are lofted into the upper atmosphere by balloon flight equipment, while the SPS is a part of the ground station equipment. A radome GPS system provides a baseline for differentially calculated GPS position and velocity data.
- The Radiosonde Surface Observing Instrumentation System (RSOIS) provides surface observation data in preparation for and during the flight.

RRS DOCUMENTS

The following documents provide operating and maintenance information for the RRS system:

RRS EQUIPMENT	NWS PUBLICATION
TRS	NWS EHB 9-710: Telemetry Receiver System (TRS) Operations and Technical Manual, Revision A
MkIIA SPS and Radiosonde	NWS EHB 9-715: Sippican MkIIA Signal Processing System (SPS) and Radiosonde Operation and Maintenance Manual
RWS	NWS EHB 9-720: RRS Workstation Operations and Maintenance Manual
Fault Isolation and Troubleshooting	NWS EHB 9-725: RRS Fault Isolation and Troubleshooting Manual
AWIPS System Administration	AWIPS RWS-LDAD System Administration Note 15
Radiosonde Surface Observing Instrumentation System (RSOIS)	NWS EHB 9-201: Operations and Maintenance Manual for the Radiosonde Surface Observing Instrumentation System (RSOIS) w/Appendices A-M

ORGANIZATION OF THE MANUAL

This RRS System Administration manual consists of a cover page, Table of Contents and the following:

- Forward - Introduction to the RRS and the use and organization of the manual.
- Chapter 1 - System Administration tasks for installing RRS Workstation (RWS) software.
- Chapter 2 - System Administration tasks for installing TRS firmware.
- Chapter 3 - System Administration tasks for installing Sippican SPS software.
- Chapter 4 - System Administration tasks for installing RSOIS software.

USE OF TERMS - RWS DEFINITIONS

To avoid confusion, the following terms will be used throughout this document:

- RWS: Abbreviation for RRS Workstation. A complete RRS Workstation includes: Gateway E6300 Computer, keyboard, mouse, monitor, printer, external HD, cables, and software.
- RRS Workstation: An alternate term for RWS.
- RWS PC or RWS Computer: Defined as the RWS processor tower alone.
- RWS (Ghost) OS: Defined as the NWS modified *Windows XP* operating system.
- RWS Operational Build Software: Defined as the applications software developed by NWS to process RRS data.
- RWS OMS: Defined as the applications software developed by NWS to perform Offline Bit testing of RRS hardware and software.
- RWS BIOS: Software/firmware for the RWS PC.

List of Abbreviations and Acronyms

ABBREVIATION	DEFINITION
AC	Alternating Current
AFC	Automatic Frequency Control
ALC	Automatic Level Control
AM	Amplitude Modulation
ANT	Antenna
AWIPS	Advanced Weather Interactive Processing System
Az	Azimuth
BILS	Balloon Inflation and Launch System
BIOS	Basic Input/Output System
BIT	Built-In-Test
C	Centigrade
CDU	Control Display Unit
COTS	Commercial-Off-The-Shelf
CPU	Central Processing Unit
dB	Decibel
dBm	Decibels relative to 1 milliwatt
dBW/M2	Decibels relative to 1 Watt per Meter Squared
DC	Direct Current
DCE	Digital Communication Equipment
Deg	Degree
EEPROM	Electrically Resalable Programmable Read Only Memory
EI	Elevation
EMI	Electromagnetic Interference
Err	Error
F	Frequency
F/d	Focal length / diameter
FM	Frequency Modulation
Freq	Frequency
GFE	Government Furnished Equipment
GPS	Global Positioning System
hPa	Hecto Pascal
IF	Intermediate Frequency
INCO	Installation and Checkout
IT	Information Technology
LAN	Local Area Network
Lat	Latitude
LCD	Liquid Crystal Display
LNA	Low Noise Amplifier
Long	Longitude
LRU	Line Replaceable Unit
M	Meter
Max	Maximum
MCU	Motion Control Unit
MHz	Megahertz
min	Minimum

ABBREVIATION	DEFINITION
Mm	Millimeter
mV	Millivolts
NAGS	Narrow Angle Gathering Sensor
NCDC	National Climatic Data Center
NE	North East
NLSC	National Logistics Support Center
NRC	National Reconditioning Center
NW	North West
OMS	Offline Maintenance Suite
OS	Operating System for RRS Workstation
PC-board or PCB	Printed Circuit Board
PDB	Precision Digital Barometer
POST	Power On Self-Test
Ppm	Parts per million
PSA	Power Supply Assembly
PTU	Pressure, Temperature and Humidity
PWM	Pulse Width Modulated
RDF	Radio Direction Finding
Rel	Relative
RF	Radio Frequency
RH	Relative Humidity
RRS	Radiosonde Replacement System
RSOIS	Radiosonde Surface Observing Instrumentation System
RWS	RRS Workstation
Rx	Receiver
SAA	Scanning Antenna Assembly
SCA	System Communication Assembly
SCB	System Control Bus
SE	South East
SFSC	Sterling Field Support Center
SPS	Signal Processing System
SQL	Structured Query Language
SW	South West
TDM	Time Division Multiplexing
TRS	Telemetry Receiver System
U	Unit
UAIB	Upper Air Inflation Building
UPS	Uninterruptible Power Supply
USB	Universal Serial Bus
UTC	Universal Coordinated Time
V	Version
VAC	Volts Alternating Current
VDC	Volts Direct Current
WAGS	Wide Angle Gathering Sensor

CHAPTER 1 - RRS WORKSTATION SYSTEM ADMINISTRATION

NWS EHB 9-730: RRS System Administration Manual, Revision A must be used to install (ghost) RWS Operating System Version (V) 1.09. If installing an operating system, also continue to use EHB 9-730, Revision A to install RRS Workstation (RWS) Software V2.2 or V2.3.1.

NOTE: If RWS Software V2.1 is already installed on the Workstation, then Operating System V1.09 does not have to be installed. Use RRS Software Note 12 to install RWS Software V2.2. Use RRS Software Note 13 to install RWS Software V2.3.1.

The purpose of this chapter is to upgrade RWS Software to V2.2 to allow sites to use Vaisala RS92-NGP radiosondes, or upgrade to V2.3.1 to allow sites to use either LMS-6 radiosondes or Vaisala RS92-NGP radiosondes.

Sites that use Vaisala RS92-NGP radiosondes must use RWS Software V2.2 or V2.3.1. Sites that use LMS-6 radiosondes must use RWS Software V2.3.1. Other-sites that use MkIIA radiosondes will install RWS Software V2.2 or V2.3.1 as directed by OPS22.

1.1 NON-ACTIVE DIRECTORY SITE INSTALLATION PROCEDURES, V2.2/V2.3.1

Section 1.1 applies ONLY to NON-ACTIVE DIRECTORY SITES that perform as stand-alone RRS sites. Stand-alone sites are RRS upper air sites not supported by either a National NWS NOAA Active Directory, or a Regional Active Directory.

NOTE: **Active Directory Sites:** RRS Active Directory sites (either National or Regional) should use Section 1.2 of this manual to install RWS Operating System V1.09 and RWS Software V2.2 or V2.3.1.

1.1.1 OVERVIEW – RWS SOFTWARE V2.2/V2.3.1

This section provides procedures to install (or ghost) the RWS Operating System V1.09, and to install RWS Software V2.2 or V2.3.1 in the RWS Workstation.

NOTE: Software notes and manuals for installing RWS Software V2.2 or V2.3.1 at sites are available on the OPS1 Web site at: <https://www.ops1.nws.noaa.gov>, or the OPS24 Web site at: http://www.nws.noaa.gov/ops2/ops24/documents/rrs_B22-OPS24.htm.

NOTE: The most current software for RWS Operating System Configuration V1.09 and RWS Software V2.2/V2.3.1 are only available on CDs from the Observing Systems Branch (OPS22, 301-713-2093 x107).

1.1.1.1 RWS Operating System Version 1.09

The RWS Operating System V1.09 is the same version used with all RWS Software Versions (V2.1, V2.2, and V2.3.1).

1.1.1.2 RWS Software Version 2.2

RWS Software V2.2 has been upgraded with the following improvements:

- Supports new Vaisala RS92-NGP radiosondes and Signal Processing System (SPS)
- Added improved Telemetry Receiver System (TRS) tracking software
- Improved software compatibility and sustainability by migrating to C# language

- Added Microsoft Structured Query Language (SQL) Server Express 2008
- Improved plot functionality with user configurable plots
- Improved account management with use of Active Directory and connectivity to OPSnet
- Added HELP function
- Added information for hardware status reporting
- Added parameters to the flight summary

Table 1-1 identifies the relationship of RWS software versions to RRS software notes.

Table 1-1: RWS Software Versions to RRS Software Notes

RWS SOFTWARE VERSION	RWS WINDOWS XP OPERATING SYSTEM (1)	DESCRIPTION	RRS SOFTWARE NOTE
V1.2	V1.07	RWS Software installation at RRS non-commissioned sites using Sippican MkIIA GPS radiosondes (2)	8
V2.1	V1.09	Current RWS software installation at RRS sites using Sippican MkIIA GPS radiosondes (2)	10
V2.2	V1.09	Update of RWS software to accommodate Vaisala RS92-NGP radiosondes and SPS and replace V2.1 at selected RRS sites (3)	12
V2.3.1	V1.09	Update of RWS Software to accommodate Sippican LMS-6 radiosondes and SPS and replace V2.1 or V2.2 at selected RRS sites	13
(1) NWS EHB 9-730: RRS System Administration Manual, Revision A, Section 1.1.3 provides instructions to install the RRS <i>Windows XP</i> operating system.			
(2) Sites that use Sippican MkIIA GPS radiosondes may continue to use RWS V2.1 unless otherwise directed. However, sites continuing to use RWS Software V2.1 must use RRS Software Note 10 to install or reinstall Software V2.1.			
(3) Sites that use Vaisala RS92-NGP radiosondes may continue to use RWS V2.2 unless otherwise directed. However, sites continuing to use RWS Software V2.2 must use RRS Software Note 12 to install or reinstall Software V2.2.			

1.1.1.3 RWS Software Version 2.3.1

RWS Software V2.3.1 has been upgraded to support the new Sippican LMS-6 radiosondes and Signal Processing System (SPS) Software. The current SPS hardware used with the MkIIA radiosondes continues to be used with the new LMS-6 radiosonde software.

1.1.1.4 Windows Software User Interface

The RWS Software V2.2 and V2.3.1 user interface is based on the Windows model. It provides flight management and data cataloging and storage capabilities via a SQL-based relational database. The software is built on the concept of pre-processor software, i.e., SPS-based, and main processor software, i.e., Workstation-based. The pre-processor software consists of all operational modules up to, and including, the data collection and conversion into meteorological values. The main processor software consists of all operational modules necessary to perform the following functions:

- Interface with the Precision Digital Barometer (PDB) to acquire surface pressure data

- Interface with the Radiosonde Surface Observing Instrumentation System (RSOIS) to acquire surface meteorological data
- Interface with the SPS to acquire flight meteorological data from the radiosonde
- Interface with the TRS to control its pointing direction
- Interface with NWS Headquarters to receive master station data
- Archive data on media for mailing to the National Climatic Data Center (NCDC)
- Perform quality analysis of acquired SPS raw data and on processed data
- Process raw data into archival products and coded messages for the Advanced Weather Interactive Processing System (AWIPS) local area network (LAN)
- Store raw and processed data in a local database
- Provide user interface functions to support pre-flight, baseline, release, flight, and post-flight activities
- Provide limited analysis support tools
- Support live flight, rework, and simulated flight operating modes

NOTE: Sites that use Sippican MkIIA radiosondes may continue to use RWS Software V2.1, unless otherwise directed to use Software V2.2 or V2.3.1. Sites continuing to use RWS Software V2.1 must use [RRS Software Note 10](#) when installing Software V2.1.

1.1.1.5 Terms-of-Reference

The following terms-of-reference apply to local stand-alone RRS sites for this manual:

- **RWS Site Administrator:** A site staff member with complete access to the RWS software, including *Windows* Administrative privileges for the RRS Workstation.
- **(Default) Administrator:** *Windows* built-in administrator account with temporary Administrative privileges only for the initial installation of the RWS software.
- **RWS Trainee:** A site member being trained as an Observer who can run simulated flights but not yet permitted to run RRS live flights.
- **RWS Observer:** A site member who is a certified RRS flight observer or operator who can conduct live flights, transmit coded messages, and run some offline utilities.
- **Stand-Alone Site:** RRS sites that communicate directly to AWIPS/LDAD/OPSnet without going through an Active Directory.

1.1.1.6 Direct Field Support Staff

Contact the Direct Field Support staff (Helpline) at the Sterling Field Support Center (SFSC) for RWS software installation and maintenance support:

- **Direct Field Support (Helpline) Phone:**
 - (703) 661-1268 (Primary)
 - (703) 661-1293 (if Primary line is busy)
- **Hours of Operation:**
 - UTC 1000 to 0200 (6 AM to 10 PM EDT) (5 AM to 9 PM EST)
 - (Monday through Friday, excluding Federal holidays)

1.1.1.7 RRS Software Build V2.2/V2.3.1 Implementation Documentation

Software notes and manuals for installing RWS Software V2.2/V2.3.1, including the RWS User Guide and training videos, are available on the OPS1 Web site at:

<http://www.ua.nws.noaa.gov/RRS.htm>, or the OPS24 Web site at:
http://www.nws.noaa.gov/ops2/ops24/documents/rrs_B22-OPS24.htm.

- **Software Implementation Plans:** Implementation activities and schedule for installing RRS Software V2.2 and V2.3.1
- **RRS Software Note 12:** Instructions on how to install and use RRS Software V2.2 when not ghosting an Operating System (to support Vaisala RS92-NGP radiosondes)
- **RRS Software Note 13:** Instructions on how to install and use RRS Software V2.3.1 when not ghosting an Operating System (to support Sippican LMS-6 radiosondes)
- **RRS Software Note 15:** Installation of Sippican SPS Software V4.8.0 for the LMS-6 radiosondes and RRS Software V2.3.1
- Lockheed Martin Sippican vendor document 9019-107, Revision H to support the operation and maintenance of Sippican SPS Software V4.8.0 for the LMS-6 radiosondes
- **User Guide for Software:** [RRS Workstation User Guide for RWS V2.2 and V2.3](#)
- **Training Videos:** Observer training videos on how to use new RRS software

1.1.2 BACKUP LOCAL STATION DATA – RWS WORKSTATION

Local Station Data is erased from the Workstation when the RWS software is installed. Local Station Data and LDAD Data must be restored to support RWS Software V2.2 and V2.3.1.

NOTE: As a precaution, sites may also want to back up other data, such as User Account Data and IP addresses to the external hard drive. See the following for precautionary backup procedures.

1.1.2.1 Record the Next Ascension Number

The next flight ascension number must be entered during installation of the RWS software. Determine the next ascension number from the last ascension number on the B-29 form and record the number:

Next ascension number: _____.

1.1.2.2 Backup RWS User Accounts

All user accounts will be erased during the ghosting process. RWS user accounts must be restored during installation of the RWS software. Complete the following steps to print RWS user account data:

1. Double-click the **RWS.NET** desktop icon to start the RWS software. The *NOAA Warning* will appear.
2. Click **OK**. The RWS main menu is displayed.
3. Select the **Enter Offline Mode** icon.
4. Click the **Tools** menu and select **Utilities**. The *Utilities* screen will open.
5. On the left side of the screen, click **User Administrative Utility** (under *Administrative Utilities*).

- Press **Alt + Print Screen** to print the username, full name, comment, and access level for RWS user accounts.

NOTE: If **Alt + Print Screen** does not print the active window, download and install the *HP* print screen utility, or use **Alt + Print Screen** to copy the screen image to the clipboard, and then use another application (e.g., Paint) to print screen images.

- Select the **Flight** menu and **Close**.
- Select the **Flight** menu and **Exit**.

1.1.2.3 Backup Site-Specific Data

The LDAD information and the Station Data will be used to install RWS Software Build V2.2/V2.3.1. Complete the following sections to print site-specific data.

NOTE: Ensure all passwords for the LAN and the dial-up LDAD connections are recorded and stored in a locked safe.

1.1.2.3.1 Backup OMS Station Data

Complete the following steps to print OMS Station Data:

- Log on to the RRS Workstation as **RWS Site Administrator**.
- For all OMS versions, double-click on the **RRS Offline Maintenance** icon to open the *RRS Offline Maintenance Menu*.
- Click on the **TRS Maintenance** option to open the *OBIT-Offline BITS* window with the *TRS Offline BITS* window displayed.
- Close the *TRS Offline BITS* window.
- Select **Setup** and **Station Data** from the top banner menu to open the *Station Data* window (Figure 1-1).

The screenshot shows a window titled "Station Data". It contains the following fields:

- RRS Station ID (Kxxx):
- TRS Position:
 - Latitude (D/M/S.x):
 - Longitude (W-, E+):
 - Altitude (m) (MSL):
- TRS Bearing-To:

	Az	El
Target	<input type="text" value="0"/>	<input type="text" value="0"/>
Baseline area	<input type="text" value="0"/>	<input type="text" value="0"/>
Release area	<input type="text" value="0"/>	<input type="text" value="0"/>

At the bottom are "OK" and "Cancel" buttons.

Figure 1-1: OMS Station Data Window (Example)

6. Press **Alt + Print Screen** to print the OMS Station Data.

NOTE: If **Alt + Print Screen** does not print the active window, download and install the *HP* print screen utility, or use **Alt + Print Screen** to copy the screen image to the clipboard, and then use another application (e.g., Paint) to print screen images.

7. Click **Cancel** to close the *Station Data* window.
8. Select **File** and **Exit** from the top banner menu to close the *OBIT-Offline BITS* window.
9. Close the *RRS Offline Maintenance Menu*.

1.1.2.3.2 Backup RWS Station Data

Complete the following steps to print the RWS Station Data:

1. Start the **RWS** software and enter **Offline Mode**.
2. Select **View**, then **Station Info** from the banner menu to open the *Station Data Display* (Figure 1-2).

Station Data Display

Master

Station Name:	Sterling, VA	Station Latitude (dd:mm:ss):	38:58:36
WMO Number:	72403	Station Longitude (ddd:mm:ss):	-77:29:11
WMO Region:	4	Station Elevation (m MSL):	88.554
Station ID:	KIAD	Base Pressure (hPa):	850
WBAN:	93734	Release Point Latitude (dd:mm:ss):	38:58:36
Responsible WFO ID:	KLWX	Release Point Longitude (ddd:mm:ss):	-77:29:09
AWIPS XXX (FAA) ID:	IAD	Release Point Elevation (m MSL):	88.435
		Last Updated:	8/5/2009 17:00:26

Local

Release Point Pressure Correction (hPa) [derived]:	0.01	Radiosonde Type:	Sippican Mark IIA GPS
Target Antenna Azimuth Angle (Deg):	336.00	Ground Receiving System:	IMS-2000 (TRS)
Target Antenna Elevation Angle (Deg):	0.00	Radiosonde Tracking Method:	GPS
SPS GPS Antenna Elevation (m WGS84):	64.52	Barometer Height (m MSL):	88.55
SPS GPS Antenna Elevation (m MSL):	97.79	Balloon Shelter Type:	High Bay
SPS GPS Antenna (N+S- dd:mm:ss.ffff):	38:58:35.88083	Balloon Gas:	Helium
SPS GPS Antenna (E+W- ddd:mm:ss.ffff):	-77:29:09.43250	Operational Frequency (MHz):	1680.00
TRS Elevation (m MSL):	95.39	Rooftop Release:	Yes
TRS Latitude (N+S- dd:mm:ss.f):	38:58:35.9	WMO Header (FZL):	UXUS97
TRS Longitude (E+W- dd:mm:ss.f):	-77:29:09.4	WMO Header (MAN):	USUS97
Orientation Correction Azimuth Angle (Deg):	0.00	WMO Header (SGL):	UMUS97
Orientation Correction Elevation Angle (Deg):	0.00	WMO Header (ABV):	UFUS97
Surface Observation (Obs.) Equipment Type:	RSOIS	WMO Header (ULG):	NXUS97
Surface Obs. Distance from Release Point (m):	20.00	WMO Header (DD1):	IUDD01
Surface Obs. Height from Release Point (m MSL):	89.24	WMO Header (DD2):	IUDD02
Surface Obs. Bearing from Release Point (Deg):	320.00	Last Updated:	8/5/2009 17:04:39

OK Cancel Print LDAD Info

Figure 1-2: RWS Station Data Display (Example)

3. Press **Alt + Print Screen** or select the **Print** button to print the RWS Station Data.
4. Right-click on the **Station Data Display** window and select the **Save Data in a File** option. The data is automatically saved to C:\RWS\RWS\DATA FILES\STATION_DATA.TXT. Also, print this screen as a backup record.
5. Click the **LDAD Info** button to open the *LDAD Data Display*. If necessary adjust the column size so the IP addresses are visible.

6. Press **Alt + PrintScreen** to print the LDAD Data.
7. Click **Cancel** in the *LDAD Data Display* to close the window.
8. Click **Cancel** in the *Station Data Display* to close the window.
9. Select **Flight** and **Exit** from the banner menu to close the RWS software.

1.1.2.4 Save Station Data to External Hard Drive

Use *Windows Explorer* to copy the `C:\RWS\RWS\Data Files\STATION_DATA.TXT` file to the USB `E:\drive` (external hard drive). If the USB drive is not available, copy the file to a CD.

1.1.2.5 Save LDAD Data to External Hard Drive

Use *Windows Explorer* to copy the folder `C:\LDAD` to the USB `E:\drive` (external hard drive), and if desired, copy to an alternate source (CD or flash drive). If the USB external drive is not available, copy the folder to a CD. (The `C:\LDAD` folder contains the PuTTY keys.)

NOTE: Do not recreate PuTTY files. If these files are missing, contact the Direct Field Support staff at (703) 661-1268 for replacements. Recreating PuTTY files would require adding the new PuTTY files to all LDADs listed as primary, secondary, and tertiary transmission routes.

1.1.2.6 Backup RRS Workstation IP Addresses

All network information will be erased during the RWS ghosting process. The network information must be recorded for later use.

1. Click **Start**.
2. Select **Control Panel**.
3. Look at the left side of the *Control Panel* screen to ensure the system is in Classic View (Figure 1-3), and not in Category View.

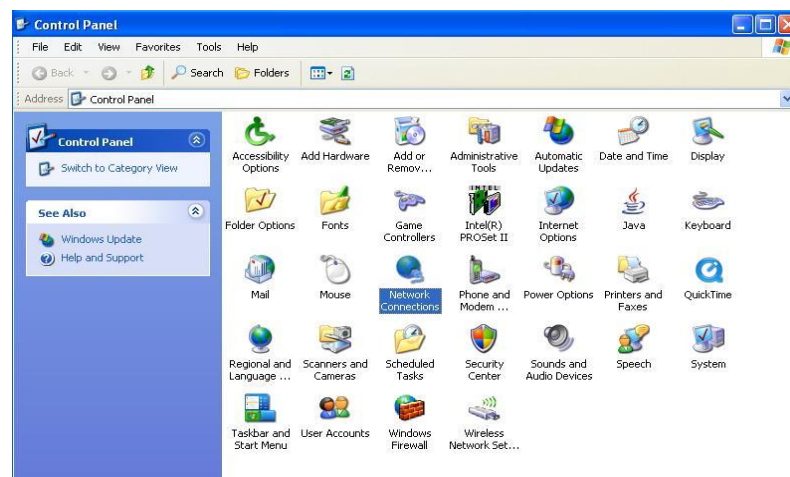


Figure 1-3: Classic View for IP Address

4. Double-click the **Network Connections** icon.
5. Right-click **Local Area Connection**.
6. Select **Properties**. The *Local Area Connection Properties* window will appear.

7. Select **Internet Protocol (TCP/IP)** from the list, and then select **Status/Support/Details**. The *Internet Protocol (TCP/IP)* window will appear.
8. Press **Alt + Print Screen** to print the IP Address, Subnet Mask, Default Gateway, Preferred and Alternate DNS Server information.
 - IP Address: _____
 - Subnet Mask: _____
 - Default Gateway: _____
 - Preferred DNS Server: _____
 - Alternate DNS Server: _____
9. Close all open windows.

1.1.2.7 Record the Computer Name

1. Click **Start**.
2. Right-click the **My Computer** icon and then select **Properties**.
3. Select the **Computer Name** tab and press **Alt + Print Screen** to print the full computer name.
4. Close all open windows.

1.1.2.8 Archive and Backup Flight Data

Prior to installing new RWS software, all active flights must be archived.

1. Double-click the **RWS-NET desktop** icon to start the RWS software. The *NOAA Warning* window will appear.
2. Click **OK**. The main RWS menu will display.
3. Select the **Enter Offline Mode** icon to open the *RWS* window.
4. Select **Tools** and **Utilities** from the banner menu to open the *RWS Software Utilities* window.
5. Go to *Flight Management Utilities* and select **NCDC Archive Utility** displayed on the left of the screen. The *NCDC Archive Utilities* window (Figure 1-4) will be updated to display the flight files for archiving.



Figure 1-4: Flight Management Utility

6. In the *NCDC Archive Utility*, select each row (one at a time) of Flight Data to be archived in a folder in C:\RWS\RWS\Data Files (Figure 1-5).

Ascension Number	Release Number	Observation Date	Observation Time	Active Flight	Flight Outcome	Archived?	WMO Number
501	1	12-02-2009	17UTC	Yes	Successful	No	69004
502	1	12-04-2009	18UTC	Yes	Successful	No	69004
503	1	12-04-2009	20UTC	Yes	Unsuccessful	No	69004

Figure 1-5: NCDC Archive Utility

- Click the **Build archives and send to NCDC** button after each flight is archived.
- Continue to archive flights until all active flights are archived.
- When finished, select **Flight** and **Close** to close the *RWS Software Utilities* window.
- Select **Flight** and **Exit** to exit the RWS software. Closing the RWS software automatically backs up all archived flights to RWS external hard drive folder E : \RWSBackup.

1.1.2.9 Export Archived Flights

Select the last 3 months of archived flights that have not been previously exported or copied to a CD or other external media.

- Double-click the **RWS-NET** desktop icon to start the RWS software. The *NOAA Warning* window will appear.
- Click **OK** to dismiss the *NOAA Warning* window. The main *RWS* menu will appear.
- Select the **Enter Offline Mode** icon to open the *RWS* window.
- Select **Tools** and **Utilities** from the banner menu to open the *RWS Software Utilities* window.
- Select **Flight Management Utilities** and **Flight Export Utility** from the *RWS Software Utilities* menu displayed on the left of the screen. The *RWS Software Utilities* window is updated to display a list of flight files (Figure 1-6).

Ascension Number	Release Number	Observation Date	Observation Time	Active Flight	Flight Outcome	Archived?	WMO Number
123	1	07-23-2009	19UTC	No	Unsuccessful	No	69003
123	2	07-23-2009	19UTC	No	Unsuccessful	No	69003
1	1	09-23-2008	19UTC	No	Unsuccessful	No	69004
1	2	09-23-2008	19UTC	No	Unsuccessful	No	69004
1	3	09-23-2008	19UTC	No	Unsuccessful	No	69004
35	1	07-17-2009	12UTC	No	Unsuccessful	No	69004
303	1	08-11-2009	20UTC	No	Successful	No	69004
111	1	07-17-2009	15UTC	Yes	Successful	No	69003

Figure 1-6: Select Ascension Export

- Select the last 3 months of archived flights that have not previously been backed up. (To select a range of flights, press the **Shift** key and select the **first and last flights** of the range, or press the **Control** key and scroll the list.)

7. Click **Export** to display the *Browse for Folder* window (Figure 1-7).

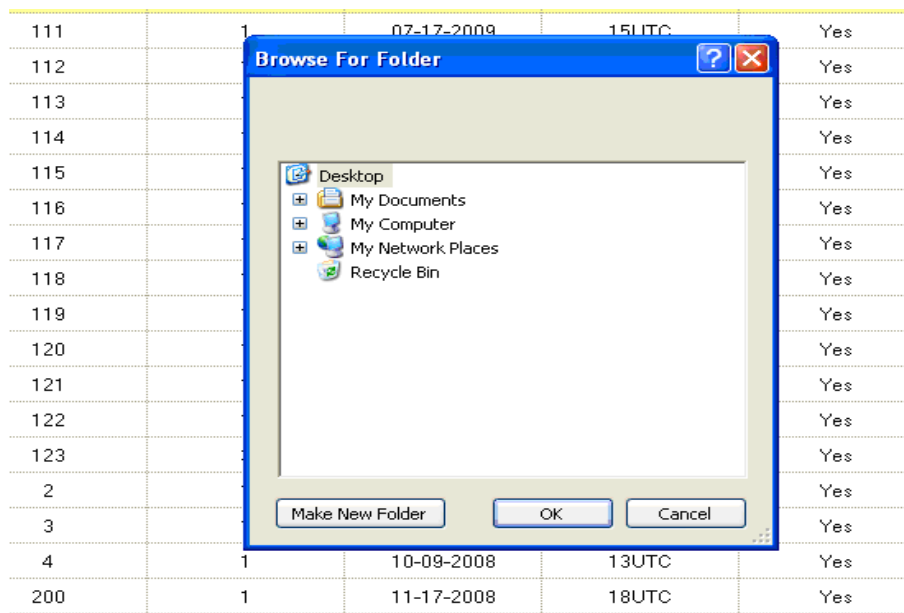


Figure 1-7: Browse to the Location for Export

8. Browse to and select the desired external media or one or more CDs (do not use the E:\drive).

NOTE: If using CDs, copy the flight files to one or more CDs and label them RWS Flight CD, Backup # _____, dated: _____.

9. Click **OK** to export flights. All selected flights will be exported. The *RWS Offline Export Utility Results* window will display when the export is complete (Figure 1-8).

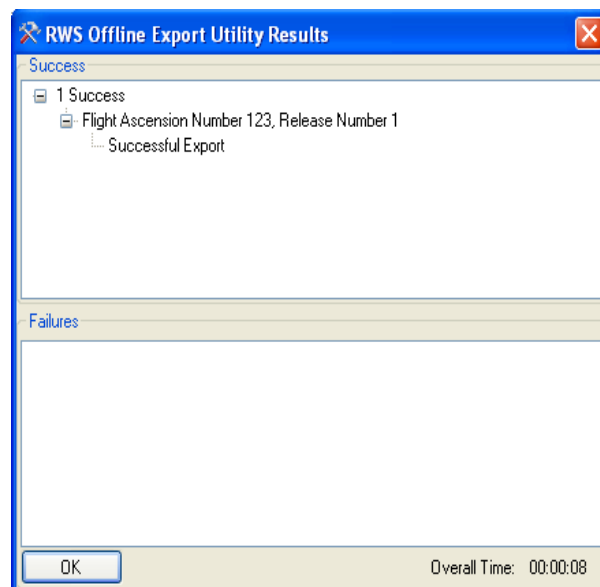


Figure 1-8: RWS Export Utility Results

10. If any flights fail to export, contact the Direct Field Support staff at (703) 661-1268. The issue should be resolved before proceeding with the installation.
11. Click **OK** to close the *RWS Offline Export Utility Results* window.
12. Select **Flight** and **Close** to close the *RWS Software Utilities* window.
13. Select **Flight** and **Exit** to exit the RWS software.

1.1.2.10 Delete Archived Flights from E:\ Drive

To avoid creating duplicate archived flight files for NCDC, all archived flight files in E:\RWSBackup must be deleted prior to installing the new RWS software.

NOTE: Be careful not to delete database files from E:\Backup when deleting flight files.

1. In *Windows*, select **Computer** and **E Drive (E:)**
2. Select **RWSBackup** folder.
3. Select all archived flights. (To select a range of flights, press the **Shift** key and select the **first and last flights** of the range, or press the **Control** key and scroll the list.)
4. Press the **Delete** key on the keyboard.
5. After all flights are deleted, click on **Close**.

1.1.3 INSTALL (GHOST) RRS OPERATING SYSTEM VERSION 1.09

CAUTION

All information stored on the hard drive will be permanently erased during this procedure.

NOTE: If operating system V1.09 is already installed, no ghosting or operating system installation is needed. Skip to Section 1.1.6.

Complete the following steps to ghost/install RWS Operating System V1.09 (this installation process will take approximately 45 minutes).

1. Log on to the RRS Workstation as **RWS Site Administrator**.
2. Insert the CD labeled **Configuration V1.09 Windows XP Pro Gateway E6300 CD 1 of 7** into the CD-RW drive.
3. Click **Start**, and then click **Shut Down** to shut down the RRS Workstation.
4. Disconnect all USB devices from the RRS Workstation (e.g., printer and external hard drive). Serial devices (e.g., PDB, SPS, TRS, etc.) can be left connected.
5. Power-up the RWS. The RRS Workstation will boot from the CD and begin ghosting the RRS operating system. Loading will pause with the following onscreen message:

NWS Configured Operating System for RWS Restoration Procedure

WARNING: Any existing data or operating system on your hard drive

will be DESTROYED if you choose to continue!!!

----- !!!!! IMPORTANT !!!!! -----

PLEASE MAKE SURE THERE ARE NO USB DEVICES ATTACHED TO THE PC!!! If any USB hard drive, printer, etc. is connected to your PC disconnect them NOW and then restart the PC.

**** Press Any Key to Continue ****

6. Press any key to continue.
7. On the next three screens, messages will display to check and/or correct the time and date stored in the PC BIOS (CMOS memory). Setting the time and date using these screens will set the BIOS clock. The BIOS clock must be correctly set to the Universal Coordinated Time (UTC), prior to starting the RRS operating system. The process may be repeated until the time and date are correctly set. If unsure of the UTC time and date, refer to <http://www.time.gov> and select **UTC** at the bottom of the screen. The time and date screens will appear as follows:

First screen:

----- !!!!! UTC TIME & DATE !!!!! -----

It is essential to set the current UTC time and date into your PC BIOS (CMOS memory) prior to starting the operating system for the first time.

On the next two screens, check/enter the current UTC time and date, which will automatically be set into your PC BIOS.

**** Press any Key to Continue ****

Second screen:

Set the current UTC time:

If the time below is correct just press [Enter], otherwise correct it. If okay, press [Enter] again, or else press [Esc] to go back...

Third screen:

Set the current UTC date:

If the date below is correct just press [Enter], otherwise correct it. If okay, press [Enter] again, or else press [Esc] to go back...

NOTE: The mouse will not work at this point. Use the Tab and Enter keys for OK .
--

8. After the time and date have been set, CD #1 will be copied to the hard drive. A progress indicator will display at the top of the screen. When CD #1 is finished, an onscreen message will display:

Insert next media and press enter to continue...

9. Replace CD #1 with CD #2 and press **Enter** to continue the copying process, and repeat until all CDs have been copied. When the process is finished, the following screen will appear:

```
++++ Remove the CD from the CD-ROM drive NOW +++++
----- Please Note and Remember -----
To log on to the default account:
USER NAME is: Administrator, PASSWORD is: n0aa:NW$
The 0 in n0aa is a ZERO.
-----
-----!!!!!! IMPORTANT !!!!!-----
Read and remember the entire box before doing as directed:
With all USB devices still disconnected, restart the system.
On the Windows desktop screen you will receive a System Settings
Change message box asking, Do you want to restart now? Yes/No.
Wait about 30 seconds until the system calms down, and then you
MUST respond: Yes to the question. After the system has finished
restarting, you may connect all devices, and then install the RWS
application software.
-----
- - - END - - -
```

10. Remove the last CD from the RRS Workstation.

1.1.4 RRS WORKSTATION SETUP (AFTER GHOSTING OPERATING SYSTEM)

1.1.4.1 Reconnect USB Devices

Perform the following steps to reconnect the USB devices:

1. With all USB devices disconnected, shut down the RRS Workstation.
2. Power on the RRS Workstation (i.e., perform a hard disk boot).

NOTE: It is important to perform a hard disk boot, or shut down the RWS, and then power on the RWS at this point in the installation. Do not simply restart.

3. Log on to the RRS Workstation as the **Default Administrator (CTL-ALT-DEL)**:

```
USER NAME: Administrator
PASSWORD: n0aa:NW$ (The 0 in n0aa is a ZERO.)
```

4. On the Desktop, a System Settings Change message box will ask:

Do you want to restart now? **Yes/No**. Wait about 30 seconds, and then respond **Yes**.

5. Wait for the RRS Workstation to restart, and then log on as the **Default Administrator**.

6. Reconnect all USB devices. The *USB Drive (E:)* screen will appear (Figure 1-9).
7. Select **Take no action**, and click **OK**.



Figure 1-9: USB Drive (E:) Screen

1.1.4.2 Enter the Computer Name

Complete the following steps to enter the computer name:

1. Click **Start** to open the main Desktop menu.
2. Right-click on the **My Computer** icon to display a list of menu options.
3. Select **Properties** to open the *System Properties* window.
4. Click the **Computer Name** tab.
5. Click the **Change** button to open the *Computer Name Changes* window.
6. Enter the Computer Name using the RRS naming convention: The Computer Name must use the format, RRS-W-NNNNN, where NNNNN is the Station WMO Number. The Station WMO Number can be found in the *Station Data Display* screen.

NOTE: The RRS naming convention applies to all RRS Workstations. Other office or Regional naming conventions should not be used.

7. Click **OK**. A window will open with the message `You must restart this computer for changes to take effect.`
8. Click **OK** and then close all open windows.
9. Respond **NO** to `Do you want to restart your Computer now? (if it appears).`

1.1.4.3 Set RRS Workstation IP Addresses

Complete the following steps to set the IP addresses to their original values:

1. Click **Start**.
2. Select **Control Panel** to open the *Control Panel* window.
3. Use the options on the left side of the *Control Panel* screen to set the display to **Classic View**, which is shown in Figure 1-10.

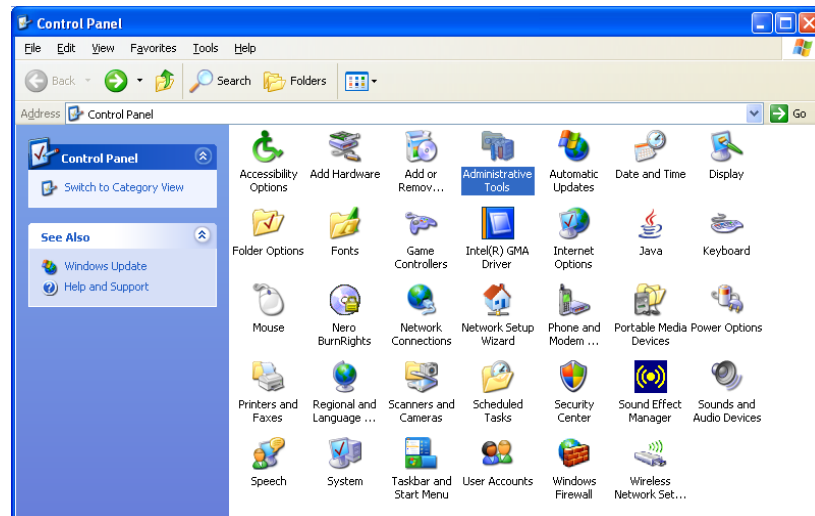


Figure 1-10: Control Panel in Classic View

4. Double-click the **Network Connections** icon.
5. Right-click **Local Area Connection**.
6. Select **Properties**. The *Local Area Connection Properties* window will appear.
7. Select **Internet Protocol (TCP/IP)** from the list, and then click **Properties**. The *Internet Protocol (TCP/IP) Properties* window will appear (Figure 1-11).

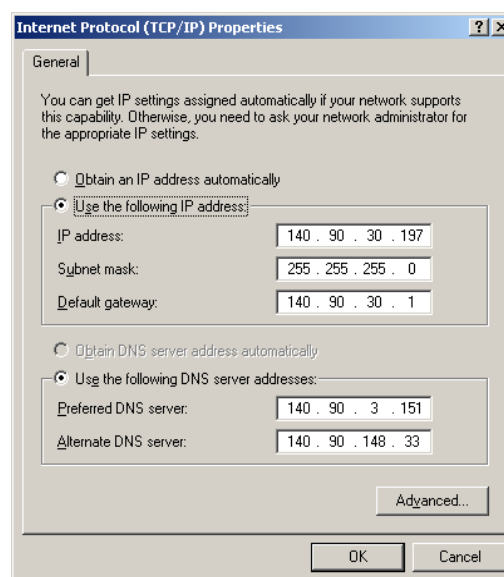


Figure 1-11: Internet Protocol (TCP/IP) Properties Window (Example Only)

8. Select the **Use the following IP address** radio button. The IP address, Subnet mask, and Default gateway address fields will be enabled.
9. Enter the **IP addresses** recorded in Section 1.1.2.6 for the RWS. Do not use leading zeros.
10. Select the **Use the following DNS server addresses** radio button. The Preferred DNS server and Alternate DNS server address fields will be enabled.
11. Enter the **DNS addresses** recorded in Section 1.1.2.6 for the RRS Workstation.
12. Once all five addresses have been entered, click **OK** in the *Internet Protocol (TCP/IP) Properties* window.
13. Click **Close** in the *Local Area Connection Properties* window.
14. Close the *Network Connections* window.
15. Restart the RWS to allow the changes to take effect.

1.1.4.4 Operating System Security

1.1.4.4.1 Set Operating System Security Policies

Use the following steps to set the Federal Desktop Core Configuration (FDCC) policies:

1. Log on to the RRS Workstation as **Default Administrator**:
USER NAME: **Administrator**
PASSWORD: **n0aa:NW\$** (The 0 in n0aa is a ZERO.)
2. Insert the RWS software CD into the RWS.
3. Cancel the RWS installation program.
4. Close all open windows. Click **YES** and **FINISH**.
5. Browse to the CD to locate the FDCC folder.
6. Copy the FDCC folder to the C:\drive.
7. Navigate to the C:\FDCC folder.
8. Double-click the **install_Security.bat** at the Warning message. Press any key to continue and wait for the program to finish.
9. If an error is raised in Step 7, double-click the **reset_xp.bat** file and wait for the program to finish.
10. Remove the RWS software CD, and restart the RWS.

1.1.4.4.2 Install Microsoft Windows Security

Complete the following steps to install *Microsoft Windows* security to support RRS Operating System Configuration V1.09.

1. Log on to the RRS Workstation as **Default Administrator**:
USER NAME: **Administrator**
PASSWORD: **n0aa:NW\$** (The 0 in n0aa is a ZERO.)
2. For Automatic Updates, perform the following steps:
 - a. Wait for the *Windows Update Notification Shield* icon to appear in the System Tray.

- b. Click on the yellow **Window Security Update Shield**. The *Automatic Updates* screen will appear (Figure 1-12).

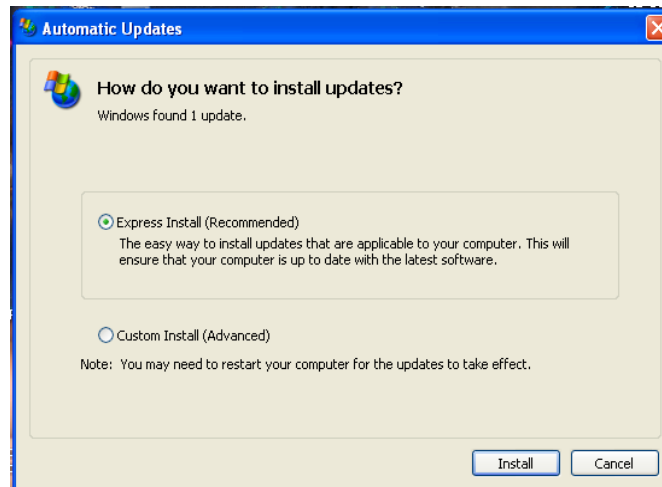


Figure 1-12: Automatic Updates Screen

- c. Select the **Express Install** radio button for high-priority updates. The application will check for security updates that have not been applied to the RRS Workstation.
 - d. Click **Install**.
 - e. An update screen will display indicating if updates are needed. If updates are available, the Install Updates (x) button will be live with the number of updates (x) available for the RWS. Select **Install Updates (x)** to install all updates. (Updates may take up to 120 minutes to download and install.)
3. If Automatic Updates does not perform, complete the following steps:
 - a. Click the *Windows Start* button. Select **All Programs**, and then **Windows Update**.
 - b. The *Microsoft Security Warning Update* screen will appear. Select **Install**.

1.1.4.5 Other Security Updates

Complete the following steps to install other security updates to support the RWS operating system including McAfee, Java, and Adobe programs.

1. Log on to the RRS Workstation as **Default Administrator**:

USER NAME: **Administrator**

PASSWORD: **n0aa:NW\$** (The 0 in n0aa is a ZERO.)

2. Perform the following steps for McAfee, Java, and Adobe Reader programs:
 - a. Click the *Windows Start* button. Select **All Programs**, and then select **McAfee**, **Java**, and **Adobe Reader** programs (one at a time) to install.
 - b. Select **Updates** (for each program).
 - c. Select **Install** (for each program).
3. Restart the RWS.

1.1.4.6 Set Date and Time Properties

1. Log on to the RRS Workstation as **Default Administrator**.
2. Double-click on the **time** icon located in the System Tray to open the *Date and Time Properties* window (Figure 1-13).
3. Click the **Time Zone** tab.

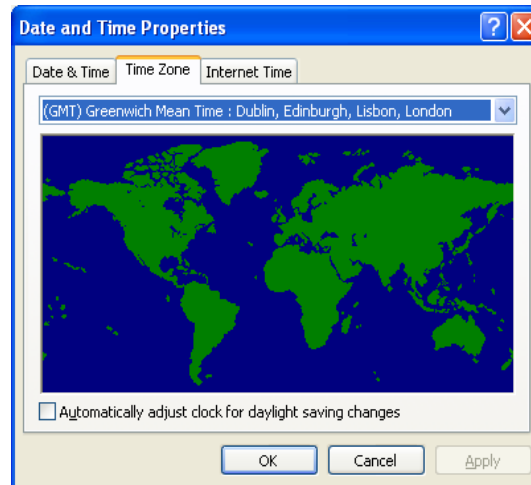


Figure 1-13: Date and Time Properties Window

4. Set the time zone to **(GMT) Coordinated Universal Time**.
5. Deselect **Automatically adjust clock for daylight saving changes**.
6. Select the **Internet Time** tab, select **time.nist.gov**, and click **Update Now**.
7. After the update is complete, click **OK** to close the *Date and Time Properties* window.

1.1.5 MANAGE LOCAL WINDOWS USER ACCOUNTS

The following procedures create local user accounts through the *Windows Administrative Utility*. The use of generic or shared user accounts is not authorized. Each RWS user must have a unique user account.

1.1.5.1 Create User Accounts

Complete the following steps to create user accounts on the RWS:

1.1.5.1.1 Open a New User Session

Complete the following steps to open the *New User* window.

1. Log on to the RRS Workstation as **Default Administrator**.
2. Select **Start**, then **Control Panel** to open the *Control Panel* window.
3. Double-click the **Administrative Tools** icon.
4. Double-click the **Computer Management** icon.
5. Open the **Local Users and Groups** folder. Right-click on **Users**, and then select **New User** to open the *New User* window.

1.1.5.1.2 Create an RWS Site Administrator Account

Complete the following steps to create the RWS Site Administrator account on the RRS Workstation:

1. Enter the **User name** (e.g., JDoe).
2. Enter the user's **Full name** (e.g., John Doe).
3. Enter **RWS Site Administrator** in the Description field.
4. Enter a password.
5. Confirm the password.
6. Deselect **User Must Change Password at the next login**.
7. Click **Create**.

1.1.5.1.3 Close the New User Session

Close the *New User* window to end the session.

1.1.5.1.4 Add RWS Site Administrator to Windows Administrator Group

The RWS Site Administrator must be a member of the Windows Administrators Security Group. Complete the following steps to join an RWS Site Administrator to the Windows Administrators security group:

1. Click the **Users** folder.
2. Right-click on the **RWS Site Administrator's User Name** (e.g., John.Doe).
3. Select **Properties**.
4. Click the **Member Of** tab.
5. Click the **Add** button.
6. Type **Administrators** in the text box for object names, and then click **OK**.
7. Click **OK**.
8. Close all windows and log off of the RWS.

1.1.5.1.5 Rename the Default Administrator Account

DoC IT Security policies require default user accounts be disabled after RWS software is installed. Check to see if the region security group has already changed the name of the Default Administrator. If not already changed, complete the following steps to rename the Default Administrator account:

1. Log on to the RRS Workstation under the name and password of the RWS Site Administrator.
2. Select **Start** and **Control Panel** to open the *Control Panel* window.
3. Click **Switch to Classic View** if required.
4. Double-click on **Administrative Tools**.
5. Double-click the **Computer Management** icon.
6. Open the **Local Users and Groups** folder.
7. Click on **Users** to display User Accounts.

8. Right click the **Administrator Account** and click on **Rename**.
9. Rename the account to **NWSAdmin**.
10. Close all open windows.

1.1.5.1.6 Change Password

The local site must change the **NWSAdmin** password.

1. Log in as **NWSAdmin**.
2. Change the password.

1.1.6 INSTALL RWS SOFTWARE VERSION 2.2 OR VERSION 2.3.1

RWS Software V2.2 or V2.3.1 is approved for installation at all RRS sites.

CAUTION

Always load RWS software as a RWS Site Administrator. Never load RWS software as the default Windows Administrator.

1.1.6.1 Install RWS Software Version 2.2 or Version 2.3.1

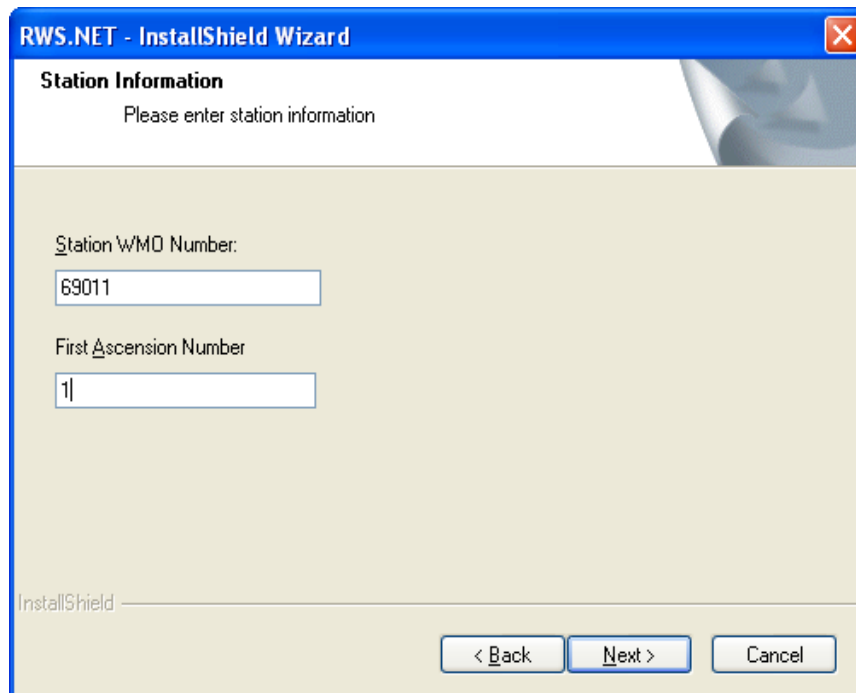
NOTE: Ensure a new version of RWS Operating System 1.09 has been installed and/or RWS Software V2.1 has been removed. If not, remove Software V2.1 prior to installing V2.2 or V2.3.1. RRS Flight, Station, User Account, and LDAD Data must be backed up prior to removing RWS Software V2.1 to avoid a loss of site data.

1. Log on to the RRS Workstation as **RWS Site Administrator**.
2. Insert the RWS software CD (**RWS.NET**) into the RRS Workstation. The *RWS.NET - InstallShield Wizard* should automatically open (Figure 1-14). If the program has not launched after a few minutes, browse the CD and double-click **setup.exe**.



Figure 1-14: RWS.NET - InstallShield Wizard

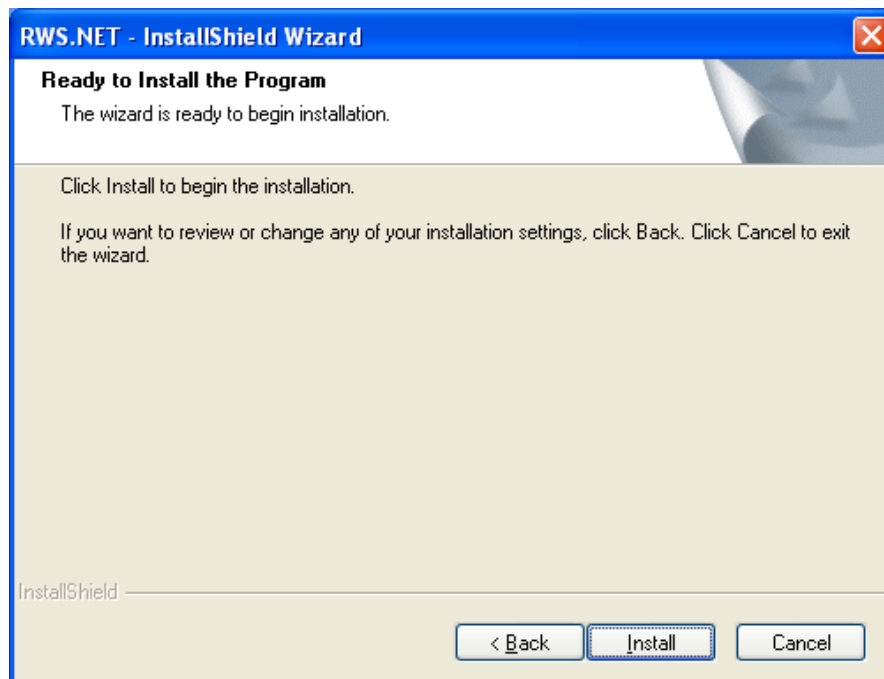
- Click **Next** to display the *Station Information* window (Figure 1-15).



The screenshot shows a Windows-style dialog box titled "RWS.NET - InstallShield Wizard". The main heading is "Station Information" with the instruction "Please enter station information". There are two text input fields: the first is labeled "Station WMO Number:" and contains the text "69011"; the second is labeled "First Ascension Number" and contains the text "1". At the bottom of the dialog, there are three buttons: "< Back", "Next >", and "Cancel". The "Next >" button is highlighted with a blue border. The "InstallShield" logo is visible in the bottom left corner of the dialog area.

Figure 1-15: Station Information Window (Example)

- Enter the **Station WMO Number** and **First Ascension Number** recorded in Section 1.1.2.
- Click **Next** to display the *Ready to Install the Program* window (Figure 1-16).



The screenshot shows a Windows-style dialog box titled "RWS.NET - InstallShield Wizard". The main heading is "Ready to Install the Program" with the instruction "The wizard is ready to begin installation." Below this, it says "Click Install to begin the installation." and "If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard." At the bottom of the dialog, there are three buttons: "< Back", "Install", and "Cancel". The "Install" button is highlighted with a blue border. The "InstallShield" logo is visible in the bottom left corner of the dialog area.

Figure 1-16: Ready to Install the Program Window

- Click **Install** and wait until the *InstallShield Wizard Complete* window indicates the process is complete (Figure 1-17).

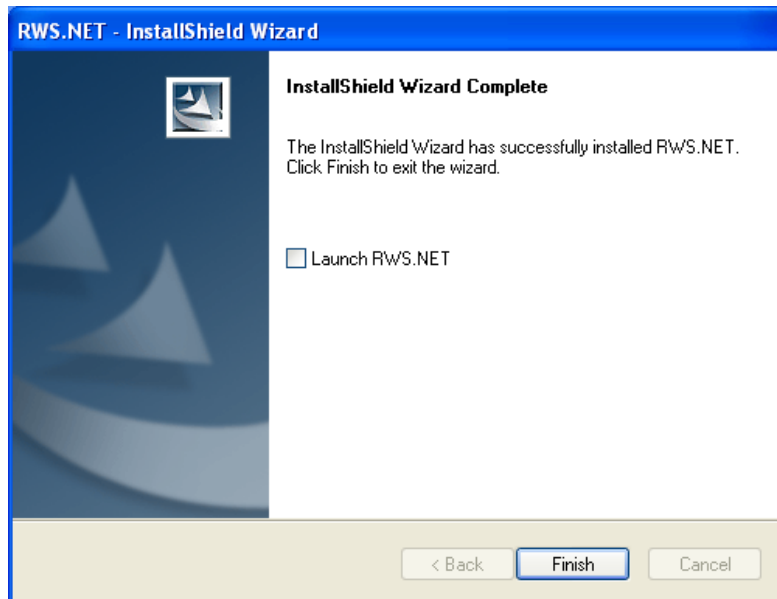


Figure 1-17: InstallShield Wizard Complete

- Uncheck **Launch RWS.NET** (Figure 1-17), and then click **Finish** to exit the installation.
- Remove the RWS software CD and restart the RRS Workstation.

1.1.6.2 Restore C:\LDAD

Review LDAD Data on the C:\drive to ensure it contains the PuTTY keys. If the PuTTY file is missing, skip to Section 1.1.6.3. If not correct, copy the E:\LDAD folder to its proper location on the RWS:

- Copy the contents of the E:\LDAD folder to C:\LDAD. The C:\LDAD folder contains the PuTTY keys required for message transmission.
- Restart the RWS.

NOTE: Do not recreate PuTTY files. If these files are missing, contact Direct Field Support staff at (703) 661-1268 for replacements. Recreating PuTTY files would require adding the new PuTTY files to all LDADs listed as primary, secondary, and tertiary transmission routes.

1.1.6.3 Enter Station Data

1.1.6.3.1 Verify Master Station Data

The Master Station Data is automatically entered when RWS.NET is first launched. Complete the following steps to enter Master Station Data. If Master Station Data needs to be manually loaded due to missing or inaccurate data, use Section 1.1.6.3.3.

- Log on to the RRS Workstation as **RWS Site Administrator**.

2. Double-click on the **RWS.NET** desktop icon to start the RWS software. The *NOAA Warning* window will appear (Figure 1-18).

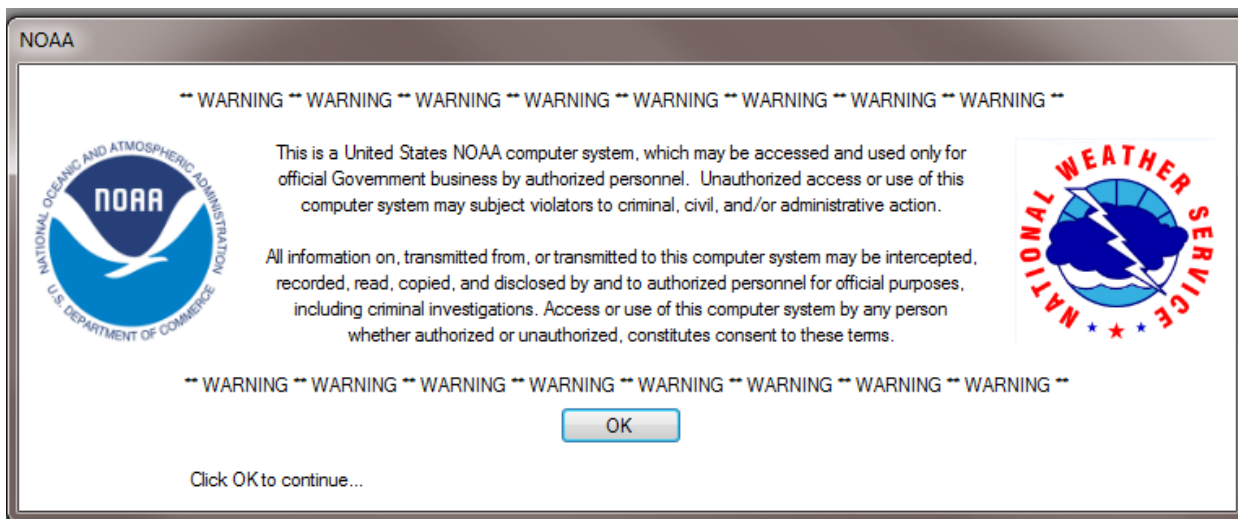


Figure 1-18: NOAA Warning Window

3. Click **OK** to dismiss the *Warning* window. The RWS will open with the *Master Station Data Initializing 2* window to indicate the Station WMO Number was used to initialize Master Station Data (Figure 1-19).

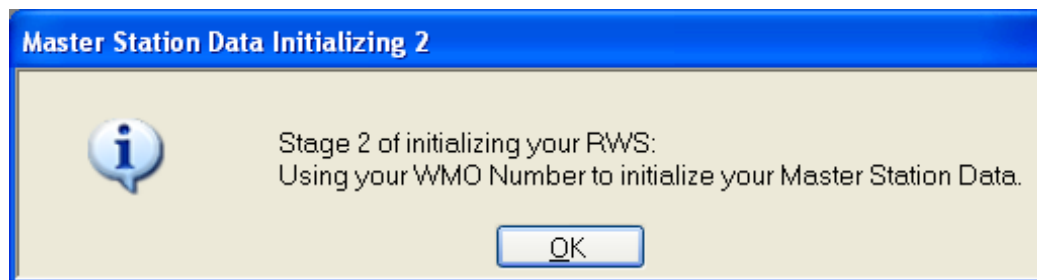


Figure 1-19: Master Station Data Initializing 2 Windows

4. Click **OK** to proceed. If initialization is successful, the *Master Station Data Initialized* window will display indicating Master Station data updated (Figure 1-20).

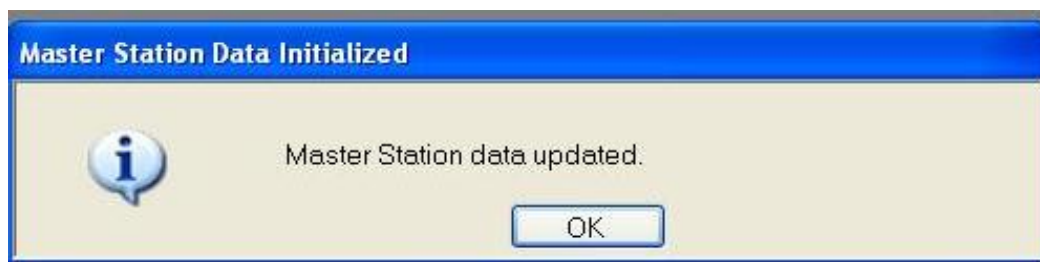


Figure 1-20: Master Station Data Initialized Window

5. Click **OK** to proceed.

1.1.6.3.2 Enter Local Station Data

If the RWS software indicates the Local Station Data has not been fully initialized, complete the following steps to enter Local Station Data:

1. If the *Local Station Data Not Initialized 1* window is displayed (Figure 1-21), click **Yes** to open the *Station Data Display* (Figure 1-22).

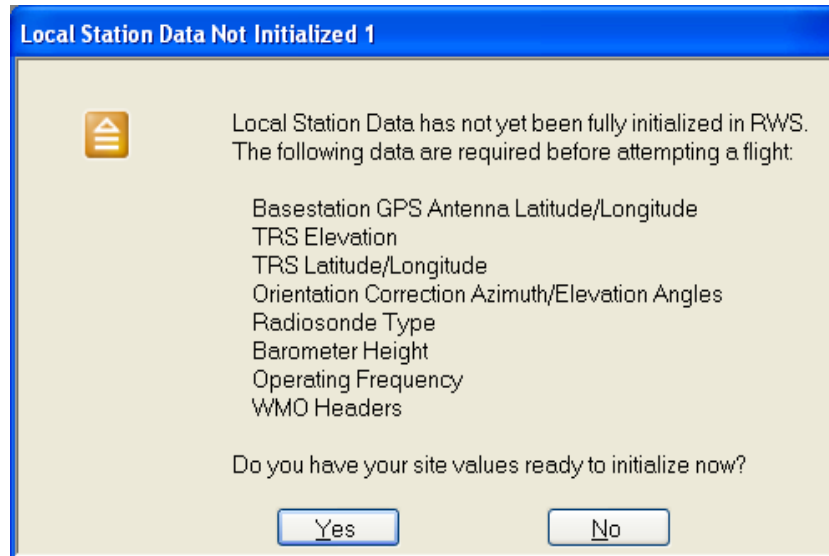


Figure 1-21: Local Station Data Not Initialized 1 Window

NOTE: In addition to the Station Data saved in Section 1.1.2, Station Data was collected during RRS deployment and cataloged in an RRS site-specific database on the NWS Headquarters Web site (<https://ops13web.nws.noaa.gov/>). Compare the locally saved Station (backup) Data to data from the OPS13 Web site. If there are discrepancies, call the Direct Field Support staff at (703) 661-1268. Once discrepancies are resolved, confirmed Station Data will be entered as a part of the RWS software installation.

NOTE: All RRS site Electronic Systems Analysts (ESA) have automatic access to the RRS site-specific database operated by OPS13. Access to others will be granted by the Direct Field Support staff at (703) 661-1268.

NOTE: Ensure the Radiosonde Type selected is Vaisala RS92-NGP (P sensor), or Sippican LMS6 (P sensor), or Sippican Mark IIA(P sensor) in the *Station Data Display* window after installing RWS software.

2. Enter the following values (recorded in Section 1.1.2.3.2) for any field values missing from the *Station Data Display* (Figure 1-22).

Figure 1-22: Station Data Display (Example Only)

- a. Release Point Pressure Correction (hPa): The Release Point Pressure Correction is derived and is not entered. The Release Point Pressure Correction is the pressure difference between the baseline point and the release point (i.e., balloon shelter). The value is calculated and cannot be entered. The value is negative if the release point is higher than the baseline point.
- b. Target Antenna Azimuth Angle (Deg): Enter the Azimuth angle of the target antenna in degrees.
- c. Target Antenna Elevation Angle (Deg): Enter the Elevation angle of the target antenna in degrees.
- d. SPS GPS Elevation (m WGS84): Enter GPS antenna Elevation in Earth Ellipsoid Sphere in meters.
- e. SPS GPS Elevation (m MSL): Enter GPS antenna Elevation above mean sea level in meters.
- f. SPS GPS Antenna Latitude (N+/S- dd:mm:ss.ffff): Enter GPS antenna latitude in the prescribed format.

NOTE: South latitudes and west longitudes are preceded by a negative sign.

- g. SPS GPS Antenna Longitude (E+/W- ddd:mm:ss.ffff): Enter GPS antenna longitude in the prescribed format.

- h. TRS Elevation (m MSL): Enter TRS Elevation above mean sea level in meters.
- i. TRS Latitude (N+/S- dd:mm:ss.f): Enter TRS latitude in the prescribed format.
- j. TRS Longitude (E+/W- dd:mm:ss.f): Enter TRS longitude in the prescribed format.
- k. Orientation Correction Azimuth Angle (Deg): Not implemented, enter **0.00**.
- l. Orientation Correction Elevation Angle (Deg): Not implemented, enter **0.00**.
- m. Surface Observation (Obs.) Equipment Type: Select appropriate option.
- n. Surface Obs. Distance from Release Point (m): Enter appropriate value in meters.
- o. Surface Observation Equipment Height (m MSL): Enter appropriate value in meters.
- p. Surface Obs. Bearing from Release Point (Deg): Enter appropriate value in degrees.
- q. Radiosonde Type: Select appropriate option (Sippican LMS6, or Mark IIA, or Vaisala RS92-NGP).
- r. Ground Receiving System: Select appropriate option. (This is the SPS type.)
- s. Radiosonde Tracking Method: Select **GPS**.
- t. Barometer Height (m MSL): Enter station specific value in meters.
- u. Balloon Shelter Type: Select appropriate option.
- v. Balloon Gas: Select appropriate option.
- w. Operational Frequencies (MHz): Enter 1680 or the site-specific frequency in MHz used for first releases.
- x. Rooftop Release: Select appropriate option.
- y. WMO Header (FZL): Enter station specific value.
- z. WMO Header (MAN): Enter station specific value.
- aa. WMO Header (SGL): Enter station specific value.
- bb. WMO Header (ABV): Enter station specific value.
- cc. WMO Header (ULG): Enter station specific value.
- dd. WMO Header (DD1): Not implemented, enter **IUDD01**.
- ee. WMO Header (DD2): Not implemented, enter **IUDD02**.

3. Print the screen and have a second person verify all data entries.

1.1.6.3.3 Manually Enter Master Station Data

NOTE: Skip this section and go to Section 1.2.6.3.4 unless the Master Station Data is not pre-loaded or is not accurate (i.e. the AWIPS SID may be XXX). Also use this procedure for RRS equipment siting changes.

The Master Data portion of the *Master Station Edit* screen (not the same as WMO Station Data) is available on the OPS13 Web site (Figure 1-23).

1. Open the OPS13 Web site using noaa.gov e-mail username and password (https://ops13web.nws.noaa.gov/rrsupload/file_upload.file_upload_frame).

2. Select the **Site Specific Data** (for site X) from the pull-down list. Click **View Site Data**.
3. Print the Site Specific Data (for Site X) from the Web site.
4. Using the printed Site Specific Data from the OPS13 Web site, verify the Master Station Data (top of Station Data Display screen).
5. If the OPS13 Web site is unavailable, use the previously saved and printed data from Section 1.2.2.3 to verify the Master Station Data.
6. Enter the RRS Site Specific Data into the RWS Master Station Data as follows:

NOTE: The Station Data, including data to identify the station, and the station and release position data will appear in text. There are edit fields for the new values.

7. Close the RWS software.
8. Insert the CD for RWS software into the RWS computer.
9. Enter the new Master Station Data for the station and release positions. The station values reflect the position of the PDB. The release values reflect the position of where the balloons are released.
10. The Master Station Data Version field is helpful to determine if the RWS has loaded and is using the new values. An incremented version will be pre-filled, and does not need to be changed for the installation.

NOTE: Do not change the Station Name, WMO Region, Station ID, WBAN, WFO ID or AWIPS (FAA) ID (this information is pre-loaded). Make changes only if a field is not pre-loaded (displays XXXs) or data is inaccurate. This information is critical for successful data transmission.

WMO Number:	72403	
Station Name:	Sterling, VA	
WMO Region:	4	<input type="text" value="4"/>
Station ID:	KIAD	<input type="text" value="KIAD"/>
WBAN:	93734	<input type="text" value="93734"/>
WFO ID:	KLWX	<input type="text" value="KLWX"/>
AWIPS (FAA) ID:	IAD	<input type="text" value="IAD"/>
Station Latitude (dd:mm:ss):	38:58:33	<input type="text" value="38:58:33"/>
Station Longitude (ddd:mm:ss):	-77:28:37	<input type="text" value="-77:28:37"/>
Station Elevation (m MSL):	84	<input type="text" value="84"/>
Base Pressure (hPa):	850	<input type="text" value="850"/>
Release Point Latitude (dd:mm:ss):	38:58:36	<input type="text" value="38:58:36"/>
Release Point Longitude (ddd:mm:ss):	-77:28:38	<input type="text" value="-77:28:38"/>
Release Elevation (m MSL):	86	<input type="text" value="86"/>
Master Station Data Version:	1.0.0.12	<input type="text" value="1.0.0.13"/>

Figure 1-23: Master Station Edit (Example)

11. When the new data is entered, click **OK**. If successful, the following message will appear (Figure 1-24).

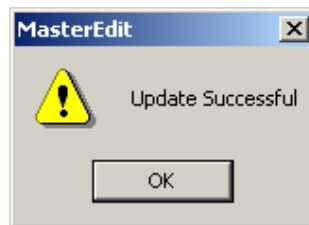


Figure 1-24: MasterEdit Update Successful Message

12. Click **OK** on the *MasterEdit* screen to close.
13. To verify the updated Master Station Data was successful, restart the RWS, go to **Offline Mode**, and open the *Station Data Display* menu (from the View Station Info menu item).
14. Re-check the Master Station Data with Web site data (Figure 1-25).

Station Data Display			
Master			
Station Name:	HQTest4	Station Latitude (dd:mm:ss):	38:58:48
WMO Number:	69011	Station Longitude (ddd:mm:ss):	-77:28:48
WMO Region:	4	Station Elevation (m MSL):	85
Station ID:	KHQQ	Base Pressure (hPa):	850
WBAN:	93734	Release Point Latitude (dd:mm:ss):	38:58:48
Responsible WFO ID:	KHQQ	Release Point Longitude (ddd:mm:ss):	-77:28:48
AWIPS XXX (FAA) ID:	HQK	Release Point Elevation (m MSL):	85
		Last Updated:	10/9/2009 17:17:49

Figure 1-25: Master Station Data Display Menu (Example)

15. If the RWS Station Data appears to be in error, contact the SFSC Helpline at (703) 661-1268 or (703) 661-1293.
16. Close the writing *Wizard*.

1.1.6.3.4 Enter LDAD Data

Complete the following steps to enter LDAD Data:

1. Click **LDAD Info** on the *Station Data Display* to open the *LDAD Data Display* (Figure 1-26).

Type	Phone Number	Server IP	User Name
LAN			
Phone 1	NA		
Phone 2	NA		
Phone 3	NA		

OK Cancel

Figure 1-26: LDAD Data Display

- Click on the **Edit** button for the LAN Type to open the *LDAD Data for LAN* window (Figure 1-27).

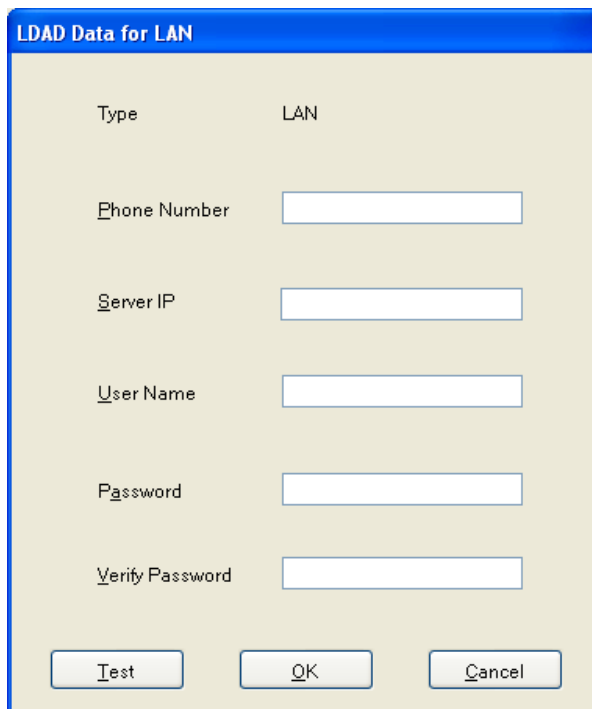
A screenshot of the 'LDAD Data for LAN' window. The window has a blue title bar with the text 'LDAD Data for LAN'. Inside, the 'Type' is set to 'LAN'. Below this are five input fields: 'Phone Number', 'Server IP', 'User Name', 'Password', and 'Verify Password'. At the bottom are three buttons: 'Test', 'OK', and 'Cancel'.

Figure 1-27: LDAD Data for LAN Window

- Complete the LDAD Data fields using the data recorded in Section 1.1.2.3.2.

NOTE: The Phone Number field for the LAN Type should be blank.

- Click **OK** to accept the changes and close the *LDAD Data for LAN* window.
- Edit the Phone 1, Phone 2, and Phone 3 Types.
- Once all LDAD Data has been entered, click **OK** to close the *LDAD Data Display*.
- Click **OK** to close the *Station Data Display*. The *Local Station Data Sufficient* window will display (Figure 1-28).
- Click **OK** to close the *Local Station Data Sufficient* window.

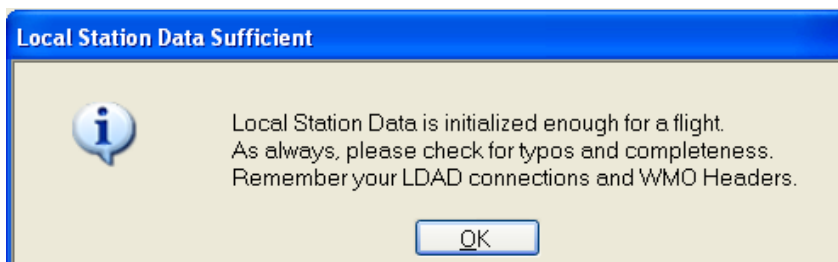


Figure 1-28: LDAD Station Data Sufficient Window

1.1.6.4 Restore Flight Data

In support of a new RWS software installation, flight files have been deleted from the E:\RWSBackup folder. If the following window appears (Figure 1-29), select **Skip Import** and continue to Section 1.1.6.5.

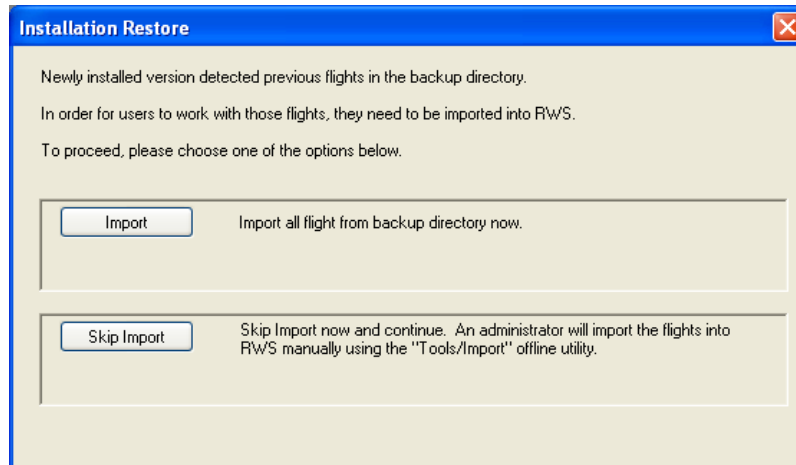


Figure 1-29: Installation Restore Window

NOTE: To avoid creating duplicate archived flight files for NCDC, flight files are not to be imported into RWS. See RRS Workstation User Guide, Section 16 for additional information.

1.1.6.5 Optional Pre-Flight “No Data” Message Test

The following test is optional. Skip this section and go to Section 1.1.6.6 if the site is going to perform a live test flight. After ghosting and prior to a flight, perform an LDAD/communications test to quickly verify that all passwords are correct, PuTTY keys are not corrupted, all communication lines are working, and flight data can be transmitted. If necessary, perform the following procedure:

1. Log on to the Workstation as an **RWS Observer**.
2. Start the RWS Software Program.
3. Send a “No Data” message to:
 - The LAN
 - Phone #1
 - Phone #2
 - Phone #3
4. Deselect all other choices except the one being tested.
5. View on an AWIPS terminal to ensure the messages were sent all the way through the system.

NOTE: When sending the “No Data” messages, you will have to select a different product for each test so that you can differentiate between the messages,

1.1.6.6 Add New RWS Users to RWS and Windows

Users must be added to RWS to provide access to the RWS software. The RWS Site Administrator will use the User Administration Utility to create new users in *Windows* and RWS simultaneously. Complete the following steps to add user's accounts.

1. Click **Tools**, then **Utilities** to open the *RWS Software Utilities* window.
2. Click Administrative **Utilities**, then **User Administration Utility** (Figure 1-30).

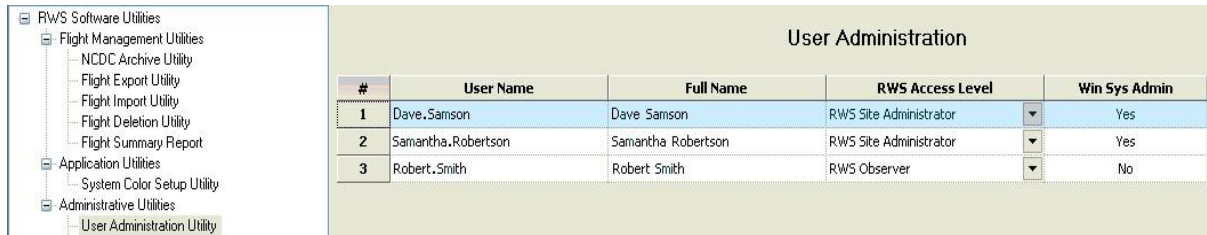


Figure 1-30: User Administration Utility Window (Example Only)

3. To add a user account, click the **Add** button in the User Administration Utility. The *Add User* window will appear (Figure 1-31).

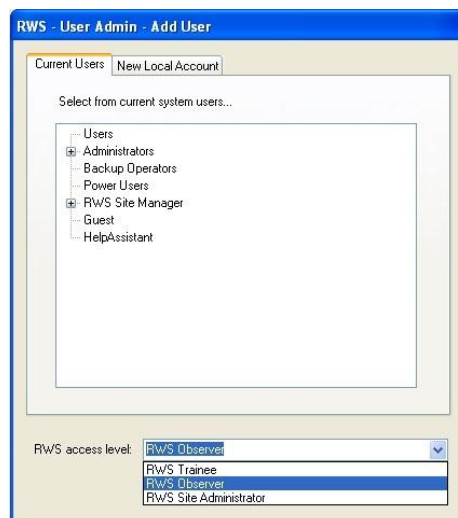


Figure 1-31: Add User Window (Example Only)

4. If the user account already exists in *Windows* select the desired user from the **Current User** tab.
5. Since only one user currently exists in *Windows*, select the **New Local Account** tab.
6. Add a unique user name for the user added to the list.

NOTE: The user name is the unique identifier used to log on to the RRS Workstation.

7. From the pull-down list, select the desired **RWS Access Level**. Users will be assigned to one of three different levels of RWS access privileges as follows:
 - **RWS Site Administrator:** A user who has complete access to the RWS software, Offline Maintenance Suite (OMS) and associated utilities. The User Administration Utility can only be used if the RWS Site Administrator has *Windows* Administrator privileges.

- **RWS Observer:** A user who can conduct live flights, transmit coded messages and run a few offline utilities.
 - **RWS Trainee:** A user who can only run a simulated flight.
8. In the *Add User* window, click **OK**. The upper-right progress bar will indicate the process of adding the user to the RWS User Administration Utility. Once added, the user will be listed in the User Administration Utility.
 9. Repeat these steps for each RWS user.
 10. When finished, select **Flight** and **Close**.

1.1.6.7 Install OMS Software

At this time, install OMS Software V2.1 in accordance with Section 1.3 before conducting an upper air flight.

1.1.7 VERIFY SOFTWARE INSTALLATION

1.1.7.1 Conduct an Upper Air Sounding and Verify Message Transfer

Conduct a live flight following the initial installation of the RWS Software V2.2/V2.3.1. See RRS Workstation User Guide for RWS Observers, for conducting an upper air sounding (for a copy, go to: <http://www.ua.nws.noaa.gov/RRS.htm>, or use the RWS Help file function).

NOTE: Conducting a live flight is not necessary when only an RWS software maintenance release is being installed.

1.1.7.2 Capture the Flight

11. Double-click the **Capture Utility** shortcut to open the *RWS Capture Utility* window.
12. Select the flight from the **RWS Capture Utility** pull-down menu (Figure 1-32).

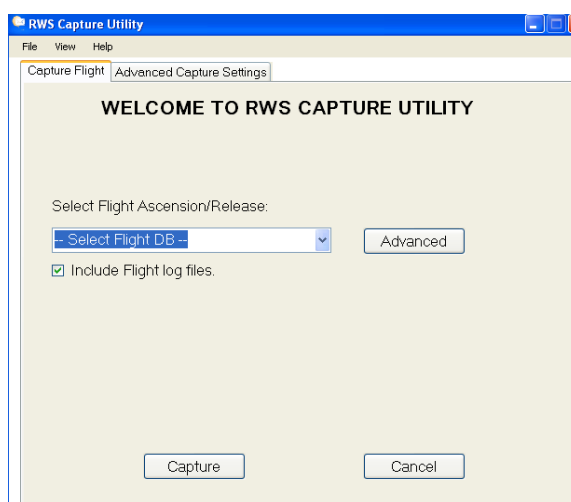


Figure 1-32: RWS Capture Utility

13. Click the **Capture** button.
14. Click **OK** when the *Capture Successful* message appears.

1.1.7.3 Verify Message Transfer

1.1.7.3.1 Verify Message Accuracy in AWIPS

Verify the receipt of the coded messages by logging on to an AWIPS terminal or by viewing the coded messages at <http://www.weather.gov/data/>.

NOTE: To verify receipt of Pacific Region coded messages, Log on to:
<http://www.prh.noaa.gov/data/>.

1.1.7.3.2 Verify Messages to NCDC

Verify the successful reception of archived data to the NCDC ftp site. Visit <http://www1.ncdc.noaa.gov/pub/data/ua/RRS/YYYY> (where YYYY is the current year). Once at the Web site, find the log file representing the site by identifying the station ID and the year and month the data was transmitted. For example `klwx_0801_log.txt` would contain the upload history for LWX for January of 2008.

1.1.8 OPTIMIZE WINDOWS DESKTOP

When time permits, optimize the *Windows* Desktop to adjust for best performance. Refer to Section 1.4 to perform this function.

1.2 ACTIVE DIRECTORY INSTALLATION PROCEDURES, V2.2/V2.3.1

Section 1.2 of this manual applies ONLY to ACTIVE DIRECTORY SITES that are RRS sites supported by either a National or a Regional Directory.

NOTE: RRS stand-alone Non-Active Directory sites should use Section 1.1 of this manual to install RRS Workstation (RWS) Operating System Version (V) 1.09 and RWS Software V2.2 or V2.3.1.

1.2.1 OVERVIEW – RWS SOFTWARE V2.2/V2.3.1

This section provides procedures to install (or ghost) RWS Operating System V1.09, and to install RWS Software V2.2 or V2.3.1 in the RWS.

NOTE: Software notes and manuals for installing RWS Software V2.2 or V2.3.1 at sites are available on the OPS1 Web site at: <https://www.ops1.nws.noaa.gov>, or the OPS24 Web site at: http://www.nws.noaa.gov/ops2/ops24/documents/rrs_B22-OPS24.htm.

NOTE: The most current software for RWS Operating System Configuration V1.09 and RWS Software V2.2/V2.3.1 are only available on CDs from the Observing Systems Branch (OPS22, 301-713-2093 x107).

1.2.1.1 RWS Operating System Configuration Version 1.09

RWS Operating System V1.09 is the same version used with all RWS Software Versions (V2.1, V2.2, and V2.3.1).

1.2.1.2 RWS Software Version 2.2

RWS Software V2.2 has been upgraded with the following improvements:

- Support for new Vaisala RS92-NGP radiosondes and Signal Processing System (SPS)
- Added improved Telemetry Receiver System (TRS) tracking software
- Improved software compatibility and sustainability by migrating to C# language
- Added Microsoft SQL Server Express 2008
- Improved plot functionality with user configurable plots
- Improved account management with use of Active Directory and connectivity to OPSnet
- Added HELP function
- Added information for hardware status reporting
- Added parameters to the Flight Summary

Table 1-2 identifies the relationship of RWS software versions to RRS software notes.

Table 1-2: RWS Software Versions to RRS Software Notes

RWS SOFTWARE VERSION	RWS WINDOWS XP OPERATING SYSTEM (1)	DESCRIPTION	RRS SOFTWARE NOTE
V1.2	V1.07	RWS Software installation at RRS non-commissioned sites using Sippican MkIIA GPS radiosondes (2)	8
V2.1	V1.09	Current RWS software installation at RRS sites using Sippican MkIIA GPS radiosondes (2)	10
V2.2	V1.09	Update of RWS software to accommodate Vaisala RS92-NGP radiosondes and SPS and replace V2.1 at selected RRS sites (3)	12
V2.3.1	V1.09	Update of RWS Software to accommodate Sippican LMS-6 radiosondes and SPS and replace V2.1 or V2.2 at selected RRS sites	13
(1) NWS EHB 9-730: RRS System Administration Manual, Revision A, Section 1.2.3 provides instructions to install the RRS <i>Windows XP</i> operating system.			
(2) Sites that use Sippican MkIIA GPS radiosondes may continue to use RWS V2.1 unless otherwise directed. However, sites continuing to use RWS Software V2.1 must use RRS Software Note 10 to install or reinstall Software V2.1.			
(3) Sites that use Vaisala RS92-NGP radiosondes may continue to use RWS V2.2 unless otherwise directed. However, sites continuing to use RWS Software V2.2 must use RRS Software Note 12 to install or reinstall Software V2.2.			

1.2.1.3 RWS Software Version 2.3.1

RWS Software V2.3.1 has been upgraded to support the new Sippican LMS-6 radiosondes and Signal Processing System (SPS) Software. The current SPS hardware used with the MkIIA radiosondes continues to be used with the new LMS-6 radiosonde software.

1.2.1.4 Windows Software User Interface

RWS Software V2.2 and V2.3.1 user interface is based on the *Windows* model. It provides flight management and data cataloging and storage capabilities via a Structured Query Language (SQL)-based relational database. The software is built on the concept of pre-processor software (i.e., Workstation-based). The pre-processor software consists of all operational modules up to, and including, the data collection and conversion into meteorological values. The main processor software consists of all operational modules necessary to perform the following functions:

- Interface with the Precision Digital Barometer (PDB) to acquire surface pressure data
- Interface with the Radiosonde Surface Observing Instrumentation System (RSOIS) to acquire surface meteorological data
- Interface with the SPS to acquire flight meteorological data from the radiosonde
- Interface with the Telemetry Receiver System (TRS) to control its pointing direction
- Interface with NWS Headquarters to receive master station data
- Archive data on media for mailing to the National Climatic Data Center (NCDC)

- Perform quality analysis of acquired SPS raw data and on processed data
- Process raw data into archival products and coded messages for the Advanced Weather Interactive Processing System (AWIPS) local area network (LAN)
- Store raw and processed data in a local database
- Provide user interface functions to support pre-flight, baseline, release, flight, and post-flight activities
- Provide limited analysis support tools
- Support live flight, rework, and simulated flight operating modes

NOTE: Sites that use Sippican MkIIA radiosondes may continue to use RWS V2.1, unless otherwise directed to use V2.2 or V2.3.1. When required, sites continuing to use RWS Software V2.1 must use [RRS Software Note 10](#) to install V2.1 Software.

1.2.1.5 Terms-of-Reference

The following terms-of-reference apply to this manual:

NATIONAL

- **NWS Domain Administrator:** An NWS staff member with NOAA National Active Directory administrative privileges for the nws.noaa/RRS domain (not currently implemented).
- **RRS Organizational Unit (OU) Administrator:** An NWS staff member with NOAA National Active Directory administrative privileges for the RRS OU (not currently implemented).

REGIONAL

- **RRS Organizational Unit Administrator:** A Regional staff member with Regional NWS Active Directory administrative privileges for the region RRS OU.

LOCAL

- **RWS Site Administrator:** A site staff member with complete access to the RWS software, including *Windows* Administrative privileges for the RRS Workstation.
- **(Default) Administrator:** *Windows* built-in administrative account with temporary Administrative privileges only for the initial installation of the RWS Software.
- **RWS Trainee:** A site member being trained as an Observer who can run simulated flights, but not yet permitted to run RRS live flights.
- **RWS Observer:** A site member who is a certified RRS flight observer or operator who can conduct live flights, transmit coded messages, and run some offline utilities.
- **Stand-Alone Site:** RRS sites that communicate directly to AWIPS/LDAD/OPSnet without going through an Active Directory.
- **Non-Commissioned Sites:** Sites that are not commissioned by the NWS.

NOTE: These Active Directory Site Installation Procedures reflect the National NWS NOAA domain naming convention. Regions may require special domain naming conventions. If required, see Regional instructions for implementing a Regional Active Directory domain.

1.2.1.6 Direct Field Support Staff

Contact the Direct Field Support staff (Helpline) at the Sterling Field Support Center (SFSC) for RWS software installation and maintenance support.

- **Direct Field Support (Helpline) Phone:**
(703) 661-1268 (Primary)
(703) 661-1293 (if Primary line is busy)
- **Hours of Operation:**
UTC 1000 to 0200 (6 AM to 10 PM EDT) (5 AM to 9 PM EST)
(Monday through Friday, excluding Federal holidays.)

1.2.1.7 RRS Software Build V2.2/V2.3.1 Implementation Documentation

Software notes and manuals for installing RWS Software V2.2/V2.3.1, including the RWS User Guide and training videos, are available on the OPS1 Web site at:

<http://www.ua.nws.noaa.gov/RRS.htm>, or the OPS24 Web site at:
http://www.nws.noaa.gov/ops2/ops24/documents/rrs_B22-OPS24.htm.

- **Software Implementation Plans:** Implementation activities and schedule for installing RRS Software V2.2 and V2.3.1
- **RRS Software Note 12:** Instructions on how to install and use RRS Software V2.2 when not ghosting an Operating System (to support Vaisala RS92-NGP Radiosondes).
- **RRS Software Note 13:** Instructions on how to install and use RRS Software V2.3.1 when not ghosting an Operating System (to support Sippican LMS-6 Radiosondes).
- **RRS Software Note 15:** Installation of Sippican SPS Software V4.8.0 for the LMS-6 radiosondes and RRS Software V2.3.1.
- Lockheed Martin Sippican vendor document 9019-107, Revision H to support the operation and maintenance of Sippican SPS Software V4.8.0 for the LMS-6 radiosondes.
- **User Guide for Software:** [RRS Workstation User Guide for RWS V2.2 and V2.3](#)
- **Training Videos:** Observer training videos on how to use the new RRS software

1.2.2 BACKUP LOCAL STATION DATA – RWS WORKSTATION

Local Station Data is erased from the Workstation when the RWS software is installed. Local Station Data and LDAD Data must be restored to support RWS Software V2.2 and V2.3.1.

NOTE: As a precaution, sites may also want to back up other data, such as User Account Data and IP addresses to the external hard drive. See the following for precautionary backup procedures.

1.2.2.1 Record the Next Ascension Number

The next flight ascension number must be entered during installation of the RWS software. Determine the next ascension number from the last ascension number on the B-29 form and record the number:

Next ascension number: _____.

1.2.2.2 Backup RWS User Accounts

All user accounts will be erased from the RRS Workstation during the ghosting process. RWS user accounts must be restored during installation of the RWS Software. Complete the following steps to print RWS user account data:

1. Double-click the **RWS.NET** desktop icon to start the RWS software. The *NOAA Warning* window will appear.
2. Click **OK**. The RWS main menu will display.
3. Select the **Enter Offline Mode** icon.
4. Click the **Tools** menu and select **Utilities**. The *Utilities* screen will open.
5. On the left side of the screen, click **User Administrative Utility** (under Administrative Utilities). The User Administrative Utility may take up to 30 seconds to appear.
6. Press **Alt + Print Screen** to print the user name, full name, comment, and access level of RWS user accounts.

NOTE: If **Alt + Print Screen** does not print the active window, download and install the **hp print screen utility**, or use the **Alt + Print Screen** to copy the screen image to the clipboard, and then use another application (e.g., *Paint*) to print screen images.

7. Select the **Flight** menu and **Close**.
8. Select the **Flight** menu and **Exit**.

1.2.2.3 Backup Site-specific Data

The LDAD information and the Station Data will be used to install RWS Software Build V2.2 or V2.3.1. Complete the following sections to print site-specific data.

NOTE: Ensure all passwords for the LAN and the dial-up LDAD connections are recorded are stored in a locked safe.

1.2.2.3.1 Backup OMS Station Data

Complete the following steps to print OMS Station Data:

1. Log on to the RRS Workstation as an **RWS Site Administrator**.
2. For all OMS Versions, double-click on the **RRS Offline Maintenance** icon to open the Offline Maintenance Menu.
3. Click on the **TRS Maintenance** option to open the *OBIT-Offline BITS* window with the *TRS Offline BITs* window displayed.
4. Close the *TRS Offline BITs* window.

5. Select **Setup** and **Station Data** from the top banner menu to open the OMS *Station Data* window (Figure 1-33).

Station Data		
RRS Station ID (Kxxx) <input type="text" value="KTST"/>		
TRS Position		
Latitude (D/M/S.x)	<input type="text" value="0/0/0.0"/>	
Longitude (W-, E+)	<input type="text" value="0/0/0.0"/>	
Altitude (m) (MSL)	<input type="text" value="0"/>	
TRS Bearing-To		
	Az	El
Target	<input type="text" value="0"/>	<input type="text" value="0"/>
Baseline area	<input type="text" value="0"/>	<input type="text" value="0"/>
Release area	<input type="text" value="0"/>	<input type="text" value="0"/>
<input type="button" value="OK"/> <input type="button" value="Cancel"/>		

Figure 1-33: OMS Station Data Window (Example)

6. Press **Alt + Print Screen** to print the Station Data.

NOTE: If **Alt + Print Screen** does not print the active window, download and install the HP print screen utility, or use **Alt + Print Screen** to copy the screen image to the clipboard, and then use another application, e.g., Paint, to print screen images.

7. Click **Cancel** to close the *Station Data* window.
8. Select **File** and **Exit** from the top banner menu to close the *OBIT-Offline BITS* window.
9. Close the RRS Offline Maintenance Menu.

1.2.2.3.2 Backup RWS Station Data

Complete the following steps to print the RWS Station Data.

1. Start the RWS software and enter **Offline Mode**.

2. Select **View** and **Station Info** from the banner menu to open the *Station Data Display* (Figure 1-34).

Station Data Display

Master

Station Name:	Sterling, VA	Station Latitude (dd:mm:ss):	38:58:36
WMO Number:	72403	Station Longitude (ddd:mm:ss):	-77:29:11
WMO Region:	4	Station Elevation (m MSL):	88.554
Station ID:	KIAD	Base Pressure (hPa):	850
WBAN:	93734	Release Point Latitude (dd:mm:ss):	38:58:36
Responsible WFO ID:	KLWX	Release Point Longitude (ddd:mm:ss):	-77:29:09
AWIPS XXX (FAA) ID:	IAD	Release Point Elevation (m MSL):	88.435
		Last Updated:	8/5/2009 17:00:26

Local

Release Point Pressure Correction (hPa) [derived]:	0.01	Radiosonde Type:	Sippican Mark IIA GPS
Target Antenna Azimuth Angle (Deg):	336.00	Ground Receiving System:	IMS-2000 (TRS)
Target Antenna Elevation Angle (Deg):	0.00	Radiosonde Tracking Method:	GPS
SPS GPS Antenna Elevation (m WGS84):	64.52	Barometer Height (m MSL):	88.55
SPS GPS Antenna Elevation (m MSL):	97.73	Balloon Shelter Type:	High Bay
SPS GPS Antenna (N+/S- dd:mm:ss.ffff):	38:58:35.88083	Balloon Gas:	Helium
SPS GPS Antenna (E+/W- ddd:mm:ss.ffff):	-77:29:09.43250	Operational Frequency (MHz):	1680.00
TRS Elevation (m MSL):	95.39	Rooftop Release:	Yes
TRS Latitude (N+/S- dd:mm:ss.f):	38:58:35.9	WMO Header (FZL):	UXUS97
TRS Longitude (E+/W- dd:mm:ss.f):	-77:29:09.4	WMO Header (MAN):	USUS97
Orientation Correction Azimuth Angle (Deg):	0.00	WMO Header (SGL):	UMUS97
Orientation Correction Elevation Angle (Deg):	0.00	WMO Header (ABV):	UFUS97
Surface Observation (Obs.) Equipment Type:	RSQIS	WMO Header (ULG):	NXUS97
Surface Obs. Distance from Release Point (m):	20.00	WMO Header (DD1):	IUDD01
Surface Obs. Height from Release Point (m MSL):	89.24	WMO Header (DD2):	IUDD02
Surface Obs. Bearing from Release Point (Deg):	320.00	Last Updated:	8/5/2009 17:04:39

OK Cancel Print LDAD Info

Figure 1-34: RWS Station Data Display (Example)

3. Press **Alt + Print Screen** or select the **Print** button to print the Station Data.
4. Right-click on the *Station Data Display* window and select the **Save Data in a File** option. The data is automatically saved to C:\RWS\RWS\DATA FILES\STATION_DATA.TXT. Also print this screen as a backup record.
5. Click the **LDAD Info** button to open the *LDAD Data Display*. If necessary, adjust the column size so the IP addresses are visible.
6. Press **Alt + PrintScreen** to print the LDAD Data.
7. Click **Cancel** on the *LDAD Data Display* to close the window.
8. Click **Cancel** on the *Station Data Display* to close the window.
9. Select **Flight** and **Exit** from the banner menu to close the RWS software.

1.2.2.4 Save Station Data to External Hard Drive

Use *Windows Explorer* to copy the C:\RWS\RWS\DATA FILES\STATION_DATA.TXT file to the USB E:\drive (external hard drive). If the USB drive is not available, copy the file to a CD.

1.2.2.5 Save LDAD Data to External Hard Drive

Use *Windows Explorer* to copy the folder C:\LDAD to the USB E:\drive (external hard drive) and to an alternate source (CD or flash drive). If the USB drive is not available, copy the folder to a CD. (The C:\LDAD folder contains the PuTTY keys.)

NOTE: Do not recreate PuTTY files. If these files are missing, contact the Direct Field Support staff at (702) 661-1268 for replacement. Recreating PuTTY files would require adding the new PuTTY files to all LDADs listed as primary, secondary, and tertiary transmission routes.

1.2.2.6 Backup RRS Workstation IP Addresses

Complete the following steps to print network information:

1. Click **Start**.
2. Select **Control Panel**.
3. Look at the left side of the *Control Panel* screen to ensure the system is in Classic View (Figure 1-35) and not in Category View.

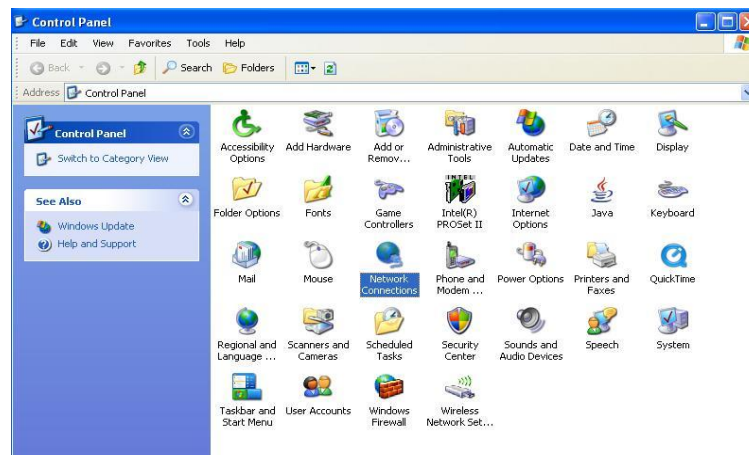


Figure 1-35: Control Panel Classic View

4. Double-click the **Network Connections** icon.
5. Right-click **Local Area Connection**.
6. Select **Properties**. The *Local Area Connection Properties* window will appear.
7. Select **Internet Protocol (TCP/IP)** from the list, and then click **Properties**. The *Internet Protocol (TCP/IP) Properties* window will appear.
8. Press **Alt + Print Screen** to print the IP Address, Subnet Mask, Default Gateway, Preferred and Alternate DNS Server information.
 - IP Address: _____
 - Subnet Mask: _____
 - Default Gateway: _____
 - Preferred DNS Server: _____
 - Alternate DNS Server: _____
9. Close all open windows.

1.2.2.7 Record Computer Name

Complete the following steps to record the computer name.

1. Click **Start**.
2. Right-click the **My Computer** icon, and then select **Properties**.
3. Select the **Computer Name** tab and press **Alt + Print Screen** to print the full computer name.
4. Close all open windows.

1.2.2.8 Archive and Backup Flight Data

Prior to installing new RWS software, all active flights must be archived.

1. Double-click the **RWS-NET desktop** icon to start the RWS software. The *NOAA Warning* window will appear.
2. Click **OK**. The main RWS menu will display.
3. Select the **Enter Offline Mode** icon to open the *RWS* window.
4. Select **Tools** and **Utilities** from the banner menu to open the *RWS Software Utilities* window.
5. Go to *Flight Management Utilities* and select **NCDC Archive Utility** displayed on the left of the screen. The *NCDC Archive Utilities* window (Figure 1-36) will be updated to display the flight files for archiving.



Figure 1-36: Flight Management Utility

6. In the *NCDC Archive Utility*, select each row (one at a time) of Flight Data to be archived in a folder in C:\RWS\RWS\Data Files (Figure 1-37).

Ascension Number	Release Number	Observation Date	Observation Time	Active Flight	Flight Outcome	Archived?	WMO Number
501	1	12-02-2009	17UTC	Yes	Successful	No	69004
502	1	12-04-2009	18UTC	Yes	Successful	No	69004
503	1	12-04-2009	20UTC	Yes	Unsuccessful	No	69004

Figure 1-37: NCDC Archive Utility

7. Click the **Build archives and send to NCDC** button after each flight is archived.
8. Continue to archive flights until all active flights are archived.
9. When finished, select **Flight** and **Close** to close the *RWS Software Utilities* window.
10. Select **Flight** and **Exit** to exit the RWS software. Closing the RWS software automatically backs up all archived flights to RWS external hard drive folder E:\RWSBackup.

1.2.2.9 Export Archived Flights

Select the last 3 months of archived flights that have not been previously exported or copied to a CD or other external media.

1. Double-click the **RWS-NET** desktop icon to start the RWS software. The *NOAA Warning* window will appear.
2. Click **OK** to dismiss the *NOAA Warning* window. The main *RWS* menu will appear.
3. Select the **Enter Offline Mode** icon to open the *RWS* window.
4. Select **Tools** and **Utilities** from the banner menu to open the *RWS Software Utilities* window.
5. Select **Flight Management Utilities** and **Flight Export Utility** from the *RWS Software Utilities* menu displayed on the left of the screen. The *RWS Software Utilities* window is updated to display a list of flight files (Figure 1-38).

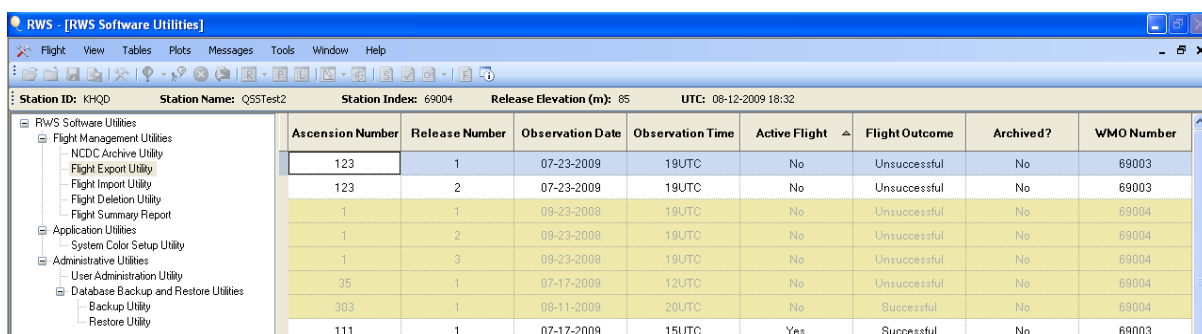


Figure 1-38: Select Ascension Export

6. Select the last 3 months of archived flights that have not previously been backed up. (To select a range of flights, press the **Shift** key and select the **first and last flights** of the range, or press the **Control** key and scroll the list.)
7. Click **Export** to display the *Browse for Folder* window (Figure 1-39).

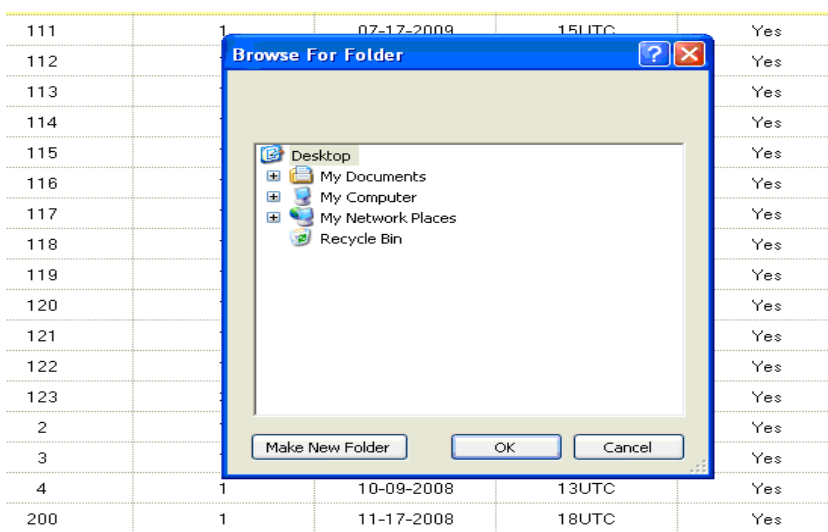


Figure 1-39: Browse to the Location for Export

8. Browse to and select the desired external media or one or more CDs (do not use the E:\drive).

NOTE: If using CDs, copy the flight files to one or more CDs and label them RWS Flight CD, Backup # _____, dated: _____.

9. Click **OK** to export flights. All selected flights will be exported. The *RWS Offline Export Utility Results* window will display when the export is complete (Figure 1-40).

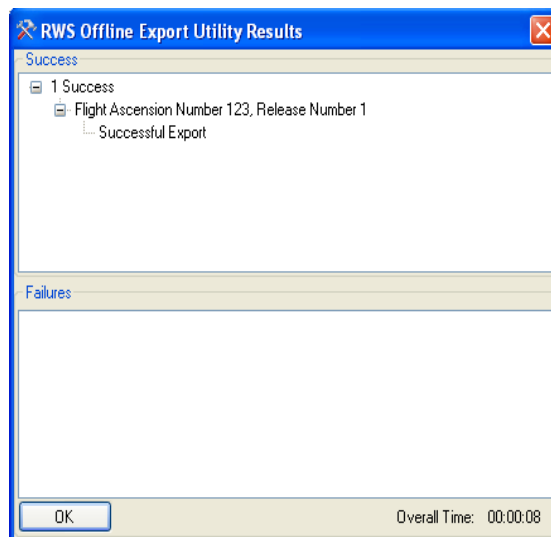


Figure 1-40: RWS Export Utility Results

10. If any flights fail to export, contact the Direct Field Support staff at (703) 661-1268. The issue should be resolved before proceeding with the installation.
11. Click **OK** to close the *RWS Offline Export Utility Results* window.
12. Select **Flight** and **Close** to close the *RWS Software Utilities* window.
13. Select **Flight** and **Exit** to exit the RWS software.

1.2.2.10 Delete Archived Flights from E:\ Drive

To avoid creating duplicate archived flight files for NCDC, all archived flight files in E:\RWSBackup must be deleted prior to installing the new RWS software.

NOTE: Be careful not to delete database files from E:\Backup when deleting flight files.

1. In *Windows*, select **Computer** and **E Drive (E:)**
2. Select **RWSBackup** folder.
3. Select all archived flights. (To select a range of flights, press the **Shift** key and select the **first and last flights** of the range, or press the **Control** key and scroll the list.)
4. Press the **Delete** key on the keyboard.
5. After all flights are deleted, click on **Close**.

1.2.3 ACTIVE DIRECTORY ADMINISTRATION

Before adding a computer object to Active Directory, pre-stage the computer object within Active Directory in the proper Organizational Unit (OU). The RRS computer Workstation must be placed in the National RRS Organizational Unit (OU) `nws.noaa/RRS/Computers` security group (when established), or a Regional RRS OU Computers security group (`er.nws.noaa/RRS/Computers`). This action can be completed using the Active Directory Users and Computers administrative tool. Refer to national *NWS Active Directory Standard Operating Procedure NADS-0007* (TBD) or Regional procedures for detailed instructions. Do not add the RRS Workstation computer Workstation to the local site computers security group.

NOTE: Section 1.2.3.1 must be completed by an RRS OU Administrator, i.e., a Regional staff member with NWS NOAA Active Directory administrative privileges for the RRS OU.

1.2.3.1 Regional Active Directory Administration

Use the following procedure to pre-stage the RRS Workstation in the Regional RRS OU Computers security group domain:

1. Log on to the RWS computer that is on the **(region).nws.noaa** domain as **RRS OU Administrator**.
2. Click **Start** and **Control Panel** to open the *Control Panel* window.
3. Click on the **Administrative Tools** icon to open the *Administrative Tools* window.
4. Click **Active Directory Users and Computers** to open the *Active Directory Users and Computers* window (Figure 1-41).

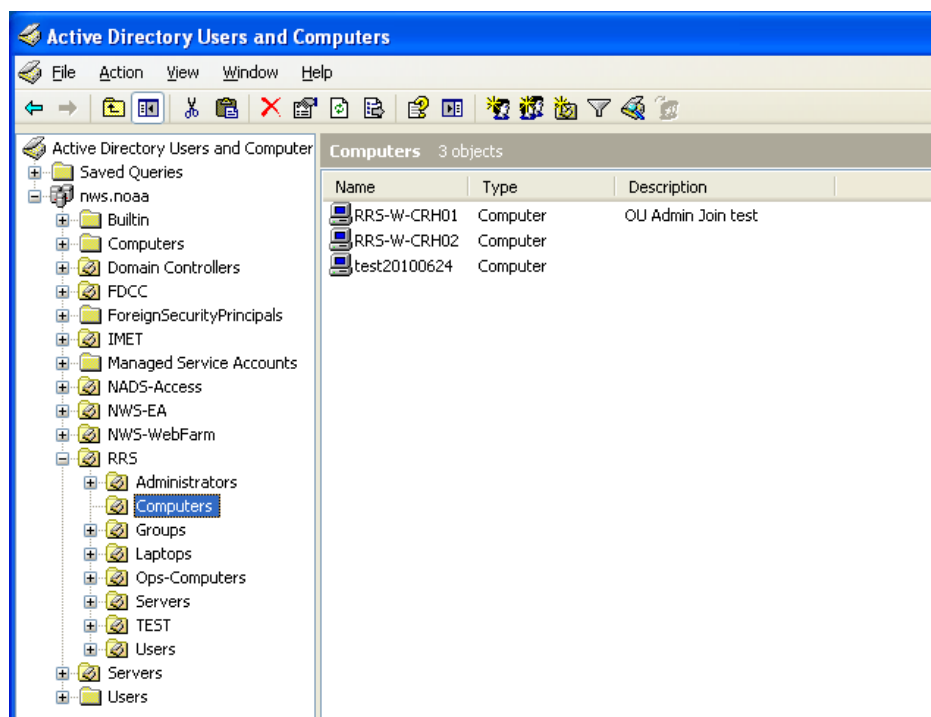


Figure 1-41: Active Directory Users and Computers Window (Example Only)

5. Navigate to the **(region).nws.noaa/RRS/Computers** security group. If that security group is not accessible, call your regional OU Security Administrator.

6. Select **Action, New** and **Computer** from the banner menu to open the *New Object – Computer* window (Figure 1-42).

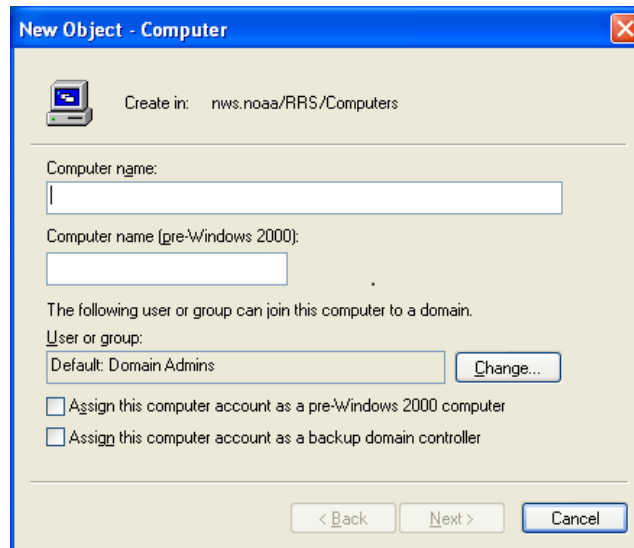
The image shows a Windows-style dialog box titled "New Object - Computer". At the top, it says "Create in: nws.noaa/RRS/Computers". Below this, there are two text input fields: "Computer name:" and "Computer name [pre-Windows 2000]:". Underneath these is a section titled "The following user or group can join this computer to a domain." with a label "User or group:" and a dropdown menu currently showing "Default: Domain Admins". To the right of the dropdown is a "Change..." button. Below the dropdown are two unchecked checkboxes: "Assign this computer account as a pre-Windows 2000 computer" and "Assign this computer account as a backup domain controller". At the bottom of the window are three buttons: "< Back", "Next >", and "Cancel".

Figure 1-42: New Object - Computer Window (Example Only)

7. Enter the computer name using the RWS naming convention described in Section 1.2.5.2.

NOTE: Check the RWS Workstation SID immediately after the ghosting process (the SID has been known to change during ghosting). If the SID is not correct, contact your Regional RRS OU Administrator.

8. Follow Regional RRS Organizational Unit Administrator guidance for assigning the RWS computer to the Regional Domain and Active Directory.
9. Click **Next** to open the *Managed* window (Figure 1-43).

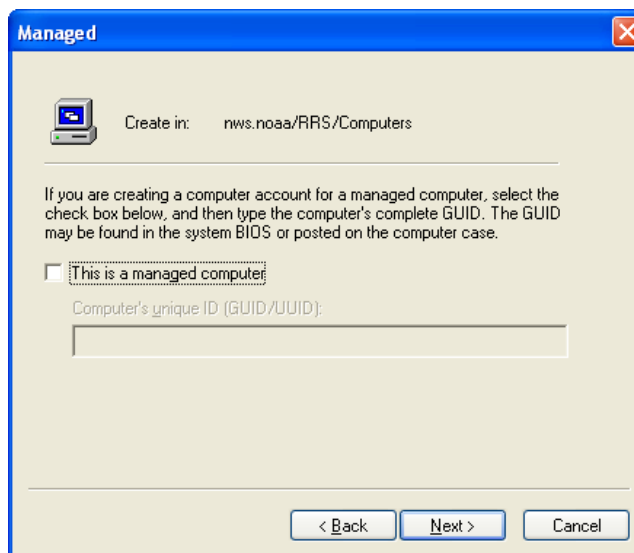
The image shows a Windows-style dialog box titled "Managed". At the top, it says "Create in: nws.noaa/RRS/Computers". Below this is a text input field. Underneath is a paragraph of text: "If you are creating a computer account for a managed computer, select the check box below, and then type the computer's complete GUID. The GUID may be found in the system BIOS or posted on the computer case." Below this text is a checkbox labeled "This is a managed computer". Underneath the checkbox is a label "Computer's unique ID (GUID/UUID):" followed by a text input field. At the bottom of the window are three buttons: "< Back", "Next >", and "Cancel".

Figure 1-43: Managed Window (Example Only)

10. Click **Next** to open the *New Object – Computer* window (Figure 1-44).

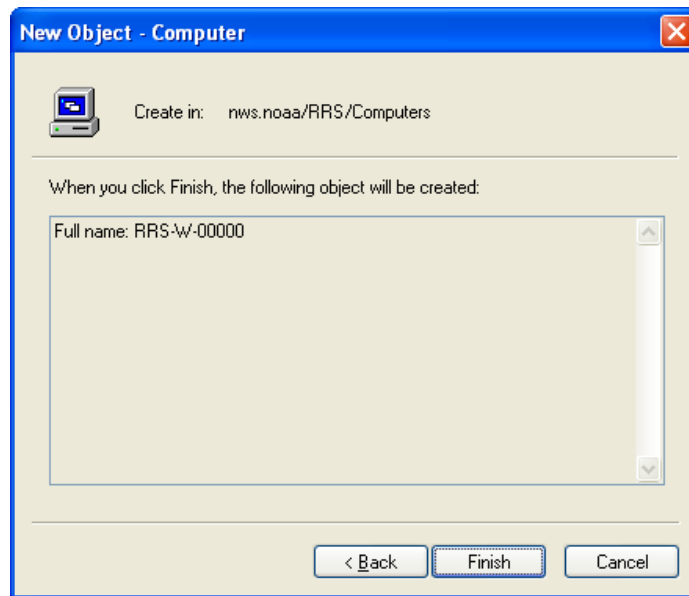


Figure 1-44: New Object - Computer Window (Example Only)

11. Click **Finish**. The Active Directory Users and Computers window is displayed.

12. Confirm the RRS Workstation is listed in the Active Directory Users and Computers window.

NOTE: An NWS Domain Administrator will later move the RRS Workstation to the nws.noaa/RRS/OPS-Computers security group. Additional security policies, such as disabling the screen saver, are applied when the RRS Workstation is joined to the OPS-Computers security group. The RWS software functions properly in either security group.

1.2.3.2 National Active Directory Administration

(To be developed when the National Active Directory is established.)

1.2.4 INSTALL (GHOST) RRS OPERATING SYSTEM V1.09

CAUTION

All information stored on the hard drive will be permanently erased during this procedure.

NOTE: If Operating System V1.09 is already installed, no ghosting or operating system installation is needed. Skip to Section 1.2.6.

Complete the following steps to ghost/install RWS Operating System V1.09 (this installation process will take approximately 45 minutes):

1. Log on to the RRS Workstation as **RWS Site Administrator**.

2. Insert the CD labeled "Configuration V1.09 Windows XP Pro Gateway E6300 CD 1 of 7", into the CD-RW drive.
3. Click **Start**, and then click **Shut Down**.
4. Disconnect all USB devices from the RRS Workstation, e.g., printer and external hard drive. Serial devices (e.g., PDB, SPS, TRS, etc.) can be left connected.
5. Power-up the RWS. The RRS Workstation will boot from the CD and begin ghosting RRS Operating System Configuration V1.09. Loading will pause with the following onscreen message:

NWS Configured Operating System for RWS Restoration Procedure

WARNING: Any existing data or operating system on your hard drive will be DESTROYED if you choose to continue!!!

----- !!!!! IMPORTANT !!!!! -----

PLEASE MAKE SURE THERE ARE NO USB DEVICES ATTACHED TO THE PC!!! If any USB hard drive, printer, etc. is connected to your PC disconnect them NOW and then restart the PC.

**** Press Any Key to Continue ****

6. Press any key to continue.
7. On the next three screens, messages will display to check and correct the time and date stored in the PC BIOS. Setting the time and date using these screens sets the BIOS clock. The BIOS clock must be correctly set to the Universal Coordinated Time (UTC), prior to starting the RRS Operating System. Go back to the time and date settings until satisfied they are correctly set. If unsure of the UTC time and date, refer to <http://www.time.gov> and select **UTC** at the bottom of the screen. The time and date screens will appear as follows:

First screen:

----- !!!!! UTC TIME & DATE !!!!! -----

It is essential to set the current UTC time and date into your PC BIOS (CMOS memory) prior to starting the operating system for the first time.

On the next two screens, check/enter the current UTC time and date, which will automatically be set into your PC BIOS.

**** Press any Key to Continue ****

Second screen:

Set the current UTC time:

If the time below is correct just press [Enter], otherwise correct it. If okay, press [Enter] again, or else press [Esc] to go back...

Third screen:

Set the current UTC date:

If the date below is correct just press [Enter], otherwise correct it.

If okay, press [Enter] again, or else press [Esc] to go back...

NOTE: The mouse will not work at this point. Use the Tab and Enter keys for **OK**.

8. After the time and date have been set, CD #1 will copy to the hard drive. When CD #1 is finished, an onscreen message will display:

Insert next media and press enter to continue...

9. Replace CD #1 with CD #2, and press **Enter** to continue the copying process. Repeat until all CDs have been copied. When the process is finished, the following screen will appear:

++++ Remove the CD from the CD-ROM drive NOW +++++

----- Please Note and Remember -----

To log on to the default account:

USER NAME is: Administrator, PASSWORD is: n0aa:NW\$

The 0 in n0aa is a ZERO.

-----!!!!!! IMPORTANT !!!!!-----

Read and remember the entire box before doing as directed:

With all USB devices still disconnected, restart the system.

On the Windows desktop screen you will receive a System Settings Change message box asking, Do you want to restart now? Yes/No. Wait about 30 seconds until the system calms down, and then you **MUST** respond: Yes to the question. After the system has finished restarting, you may connect all devices, and then install the RWS application software.

- - - END - - -

10. Remove the last CD from the RRS Workstation.

1.2.5 RRS WORKSTATION SETUP (AFTER GHOSTING OPERATING SYSTEM)

1.2.5.1 Reconnect USB Devices

Perform the following steps to reconnect USB devices:

1. With all USB devices disconnected, shut down the RRS Workstation.
2. Power on the RWS (i.e., perform a hard disk boot).

NOTE: It is important to perform a hard disk boot, or shut down the RWS, and then power on the RWS at this point in the installation. Do not simply restart the RRS Workstation.

- Log on to the R as the **Default Administrator (CTL-ALT-DEL)**:

USER NAME: **Administrator**

PASSWORD: **n0aa:NW\$** (The 0 in n0aa is a ZERO.)

- On the Desktop, a *System Settings Change* message box will ask:

Do you want to restart now? Yes/No

Wait approximately 30 seconds, and respond **Yes**.

- Wait for the RWS to restart, and then log on to the RWS as the **Default Administrator**.
- Reconnect all USB devices. The *USB Drive (E:)* screen will appear (Figure 1-45).
- Select **Take no action**, and click **OK**.

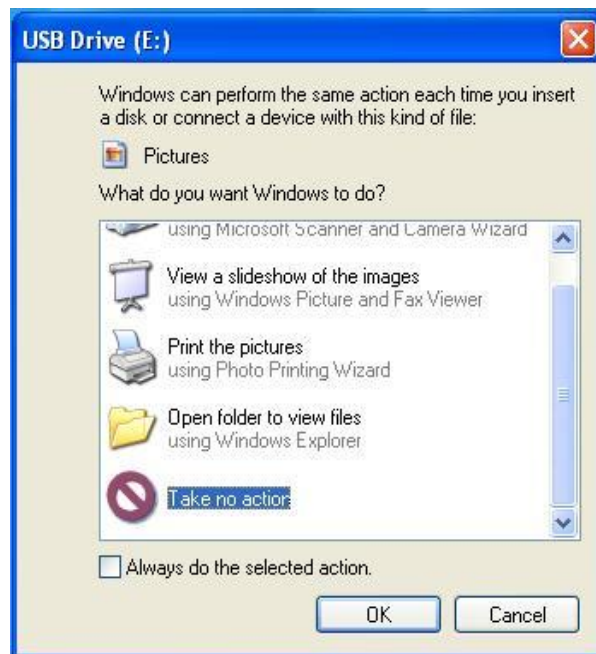


Figure 1-45: USB Drive (E:) Screen

1.2.5.2 Enter the Computer Name

Complete the following steps to enter the computer name:

- Click **Start** to open the main Desktop menu.
- Right-click on **My Computer** icon to display a list of menu options.
- Select **Properties** to open the *System Properties* window.
- Click on the **Computer Name** tab.
- Click the **Change** button. The *Computer Name Changes* window will appear.
- Enter the computer name using the naming convention of the Domain the computer is joining. The computer name should use the format, XXX-W-NNNNN. XXX is a code assigned by the region domain. NNNNN is the Station WMO Number. The Station WMO Number can be found in the *Station Data Display* screen.

NOTE: Ensure the computer name matches the computer name loaded into your Active Directory in Section 1.2.3.

7. Click **OK**. A window will open with the message You must restart this computer for changes to take effect.
8. Click **OK** and close all open windows.
9. Respond **NO** to Do you want to restart your Computer now? (if it appears).

1.2.5.3 Set the RRS Workstation IP Addresses

Complete the following steps to set the IP addresses to their original values:

1. Click **Start**.
2. Select **Control Panel**.
3. Use the option on the left side of the *Control Panel* screen to ensure the system is in Classic View (Figure 1-46) and not Category View.

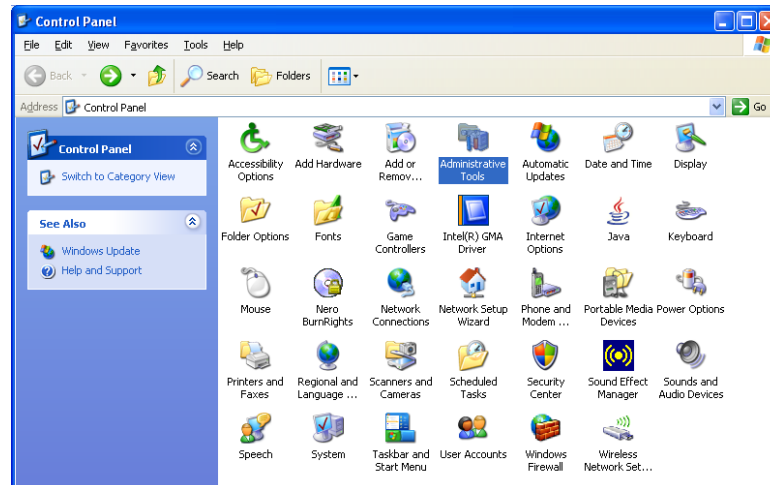


Figure 1-46: Control Panel Displayed in Classic View

4. Double-click the **Network Connections** icon.
5. Right-click **Local Area Connection**.
6. Select **Properties**. The *Local Area Connection Properties* window will appear.

7. Select **Internet Protocol (TCP/IP)** from the list, and then click **Properties**. The *Internet Protocol (TCP/IP) Properties* window will display (Figure 1-47).

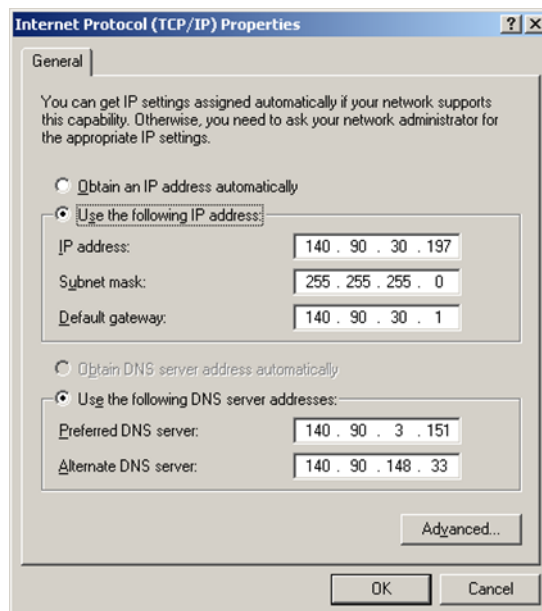


Figure 1-47: Internet Protocol (TCP/IP) Properties Window (Example Only)

8. Select **Use the following IP address** button to enable the IP address, Subnet mask, and Default gateway address fields.
9. Enter the **IP addresses** recorded in Section 1.2.2.6 for the RWS. Do not use leading zeros.
10. Select the **Use the following DNS server addresses** radio button to enable the Preferred DNS server and Alternate DNS server address fields.
11. Enter the **DNS addresses** recorded in Section 1.2.2.6 for the RWS.
12. Once all five IP addresses are entered, click **OK** in the *Internet Protocol (TCP/IP) Properties* window.
13. Click **Close** in the *Local Area Connection Properties* window.
14. Close the *Network Connections* window.
15. Restart the RWS to allow the changes to take effect.

1.2.5.4 Install Microsoft Windows Security

Complete the following steps to install *Microsoft Windows* security to support RRS Operating System Configuration V1.09.

1. Log on to the RRS Workstation as **Default Administrator**:

USER NAME: **Administrator**

PASSWORD: **n0aa:NW\$** (The 0 in n0aa is a ZERO.)

2. For Automatic Updates, perform the following steps:
 - a. Wait for the Windows Update Notification Shield icon to appear in the System Tray.
 - b. Click on the yellow **Window Security Update Shield**. The *Automatic Updates* screen will appear (Figure 1-48).

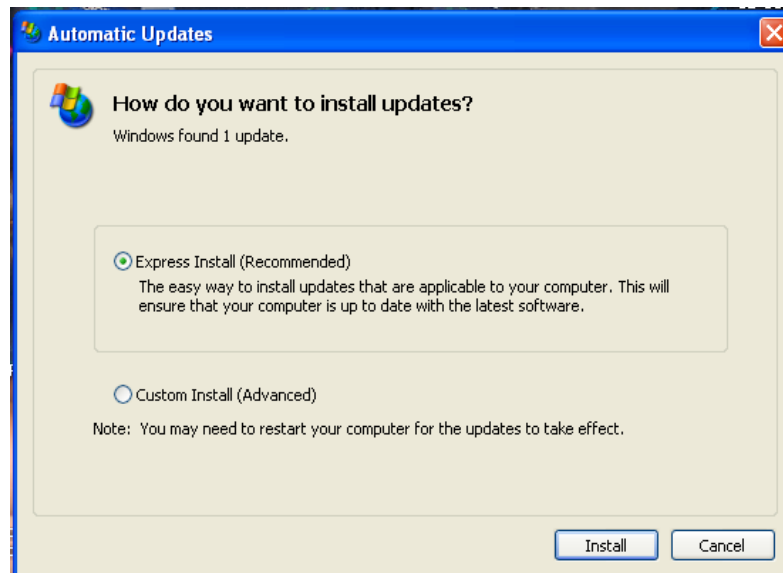


Figure 1-48: Automatic Updates Screen

- c. Select the **Express Install** radio button for high-priority updates. The application will check for security updates that have not been applied to the RRS Workstation.
 - d. Click **Install**.
 - e. An update screen will display indicating if updates are needed. If updates are available, the Install Updates (x) button will be live with the number of updates (x) available for the RWS. Select **Install Updates (x)** to install all updates. (Updates may take up to 120 minutes to download and install.)
3. If Automatic Updates do not work, perform the following steps:
 - a. Click the *Windows* **Start** button. Select **All Programs**, and then **Windows Update**.
 - b. The *Microsoft Security Warning Update* screen will appear. Select **Install**.

1.2.5.5 Other Security Updates

Complete the following steps to install other security updates to support the RWS operating system including *McAfee*, *Java*, and *Adobe* programs.

1. Log on to the RRS Workstation as **Default Administrator**:
USER NAME: **Administrator**
PASSWORD: **n0aa:NW\$** (The 0 in n0aa is a ZERO.)
2. Perform the following steps for *McAfee*, *Java*, and *Adobe Reader* programs:
 - a. Click the *Windows* **Start** button. Select **All Programs**, and then select **McAfee**, **Java**, and **Adobe Reader** programs (one at a time) to install.
 - b. Select **Updates** (for each program).
 - c. Select **Install** (for each program).
3. Restart the RWS.

1.2.5.6 Operating System Security Policies

Complete the following steps to add the RWS to the Regional domain. Refer to Regional procedures for detailed instructions.

NOTE: This section must be completed by Regional staff member with NWS NOAA Active Directory administrative privileges for the RRS OU.

1. Log on to the RRS Workstation as the **Default Administrator**:

USER NAME: **Administrator**

PASSWORD: **n0aa:NW\$** (The 0 in n0aa is a ZERO.)

2. Click **Start**.
3. Right-click on **My Computer** to open a drop-down menu, and then click **Properties** to open the *System Properties* window.
4. Click on the **Computer Name** tab.
5. Click the **Change** button. The *Computer Name Changes* window will appear.
6. Select **Domain**, and then enter the Regional Domain name in the domain field.
7. Click **OK**, and enter the **Region OU Administrator user name** when prompted. The complete user name is entered without the @noaa.gov extension (e.g., firstname.lastname).
8. Click **OK**. A window will open with the message *You must restart this computer for changes to take effect*.
9. Click **OK** and close all open windows.
10. Respond **Yes** to *Do you want to restart your Computer now?* (if it appears).
11. Log on to the RRS Workstation using the Region OU Administrator account.
12. Open a command prompt.
13. At the prompt, enter the command **gpupdate /force** (notice space prior to slash) and wait for the command to finish.
14. Enter the command **gpresult** and examine the result. If the RRS Workstation has been added to the RRS OU, the COMPUTER SETTINGS section should list CN=XXX-W-NNNNN, where NNNNN is the Station WMO Number, OU= SID code or RRS, DC=nws, and DC=noaa. The list resulting from the gpresult command will be different for each Regional Active Directory user. If necessary, see Regional OU Administrator for guidance.
15. Close the command prompt.
16. Restart the RWS.

1.2.5.7 Create an RWS Site Administrator Account

The RWS software is installed by an RWS Site Administrator. RWS Site Administrators must be members of the RRS Workstation Windows Administrators Security Group. Complete the following steps to create an RWS Site Administrator account.

NOTE: This section must be completed by a Region OU Administrator (i.e., a site staff member with NOAA Active Directory administrative privileges).

1. Log on to the RRS Workstation using the Region OU Administrator account.
2. Select **Start** and **Control Panel** to open the *Control Panel* window.
3. Click **Switch to Classic View** if required.
4. Double-click the **User Accounts** icon to open a *User Accounts* window.

NOTE: A pop-up window may appear when you try to open a User Account. If so enter the Default Administrator name and password.

5. Click the **Add** button to open an *Add New User* window.
6. Enter a valid User name and Domain.
7. Click **Next** to update the open window.
8. Click the **Other** radio button for access level, and then select Administrators from the list of options.
9. Click **Finish** to accept the changes.
10. Verify the new account is listed under Users for this computer.
11. Click **OK** to close the *User Accounts* window.
12. Close the *Control Panel* window and log off of the RRS Workstation.

1.2.5.8 Rename the Default Administrator Account

DoC IT Security policies require default user accounts be disabled after RWS software is installed. Check to see if the region security group has already changed the name of the Default Administrator. If not already changed, complete the following steps to rename the default Administrator account:

1. Log on to the RWS under the name and password of the RWS Site Administrator.
2. Select **Start**, then **Control Panel** to open the *Control Panel* window.
3. Click **Switch to Classic View** if required.
4. Double-click on **Administrative Tools**.
5. Double-click on the **Computer Management** icon.
6. Open the **Local Users and Groups** folder.
7. Click on **Users** to display User Accounts.
8. Right-click the **Administrator Account** and click on **Rename**.
9. Rename the account to **NWSAdmin**.
10. Close all open windows.

1.2.5.9 Change Password

The local site must change the **NWSAdmin** password.

1. Log in as **NWSAdmin**.
2. Change the password.

1.2.6 RWS SOFTWARE V2.2 OR V2.3.1 INITIAL INSTALLATION

RWS Software V2.2 or V2.3.1 is approved for installation at designated sites.

CAUTION

Always load RWS software as a RWS Site Administrator. Never load RWS software as the default Windows Administrator.

1.2.6.1 Install RWS Software V2.2 or V2.3.1

NOTE: Ensure a new version of RWS Operating System 1.09 has been installed and/or RWS Software V2.1 has been removed. If not, remove RWS Software V2.1 prior to installing V2.2 or V2.3.1. RRS Flight, Station, User Account, and LDAD Data must be backed up prior to removing RWS Software V2.1 to avoid a loss of site data.

1. Log on to the RRS Workstation as RWS Site Administrator.
2. Insert the RWS software CD (RWS.NET) into the RWS. The *RWS.NET - InstallShield Wizard* should automatically open (Figure 1-49). If, after a few minutes, the program has not launched, browse the CD and double-click on **setup.exe**.

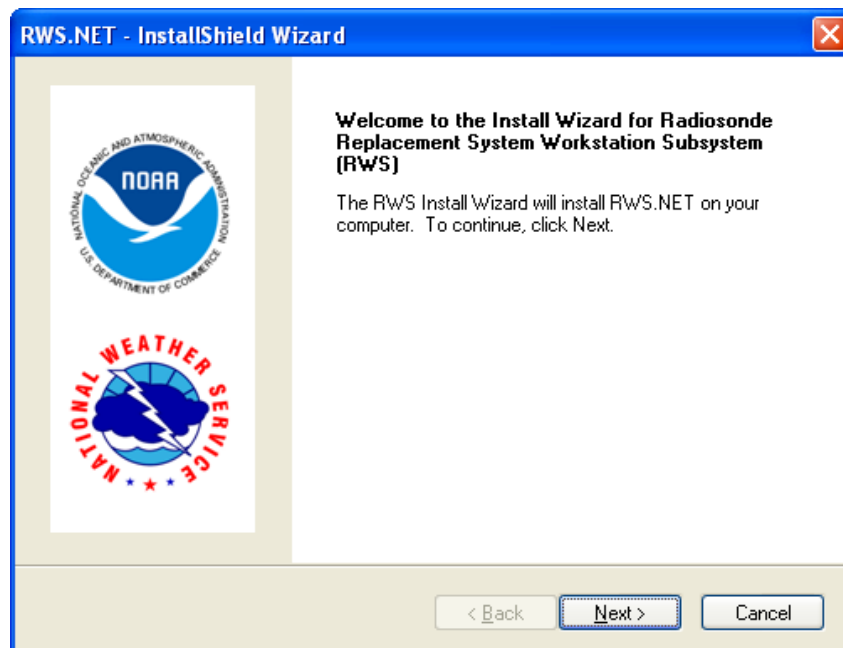
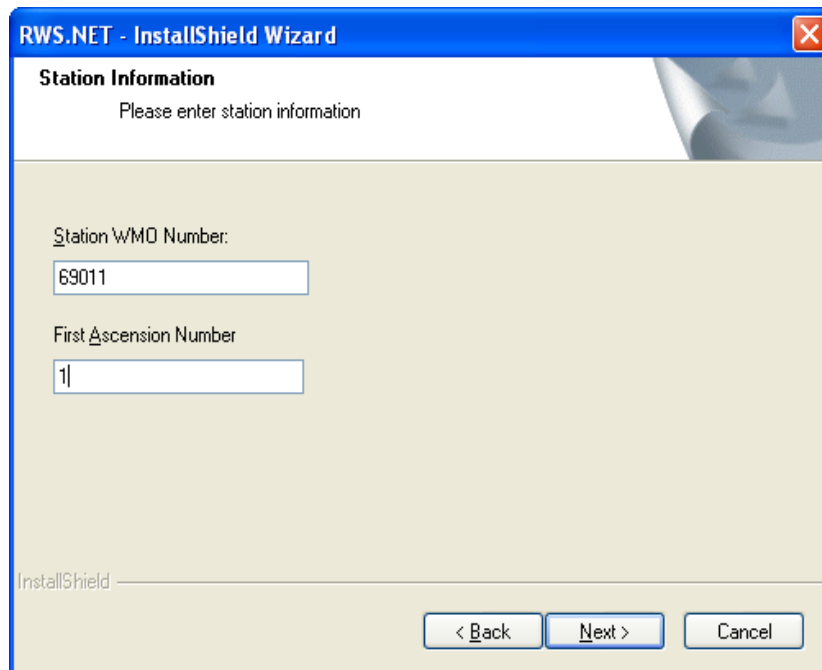


Figure 1-49: RWS.NET - InstallShield Wizard

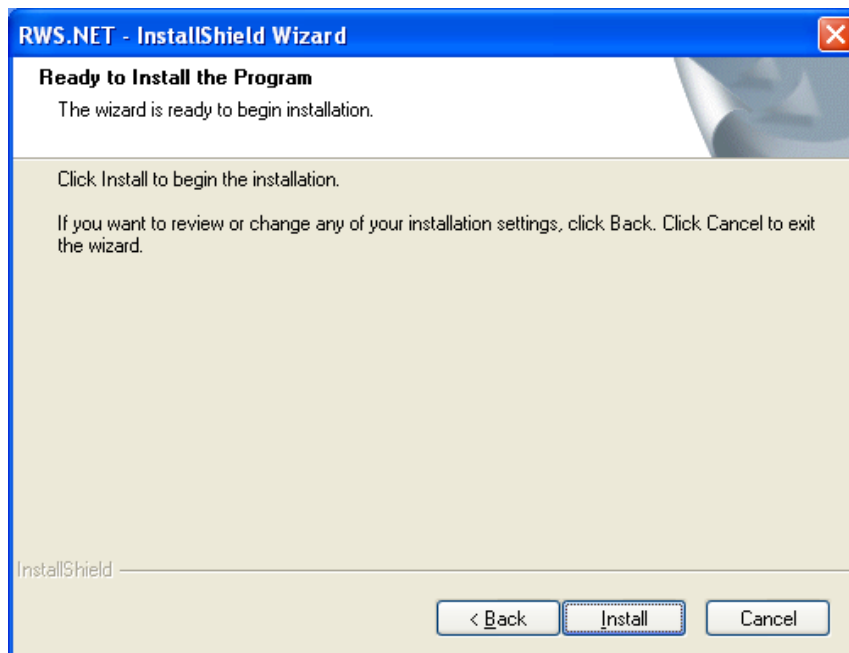
- Click **Next** to display the *Station Information* window (Figure 1-50).



The screenshot shows the 'Station Information' window of the RWS.NET - InstallShield Wizard. The window has a blue title bar with the text 'RWS.NET - InstallShield Wizard' and a close button. Below the title bar, the text 'Station Information' is displayed, followed by the instruction 'Please enter station information'. The main area contains two input fields: 'Station WMO Number' with the value '69011' and 'First Ascension Number' with the value '1'. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'InstallShield' logo is visible in the bottom left corner.

Figure 1-50: Station Information Window

- Enter the **Station WMO Number** and **First Ascension Number** recorded in Section 1.2.2.
- Click **Next** to display the *Ready to Install the Program* window (Figure 1-51).



The screenshot shows the 'Ready to Install the Program' window of the RWS.NET - InstallShield Wizard. The window has a blue title bar with the text 'RWS.NET - InstallShield Wizard' and a close button. Below the title bar, the text 'Ready to Install the Program' is displayed, followed by the instruction 'The wizard is ready to begin installation.' The main area contains the text 'Click Install to begin the installation.' and 'If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.' At the bottom, there are three buttons: '< Back', 'Install', and 'Cancel'. The 'InstallShield' logo is visible in the bottom left corner.

Figure 1-51: Ready to Install the Program Window

- Click **Install** and wait until the *InstallShield Wizard Complete* window indicates the process is complete (Figure 1-52).

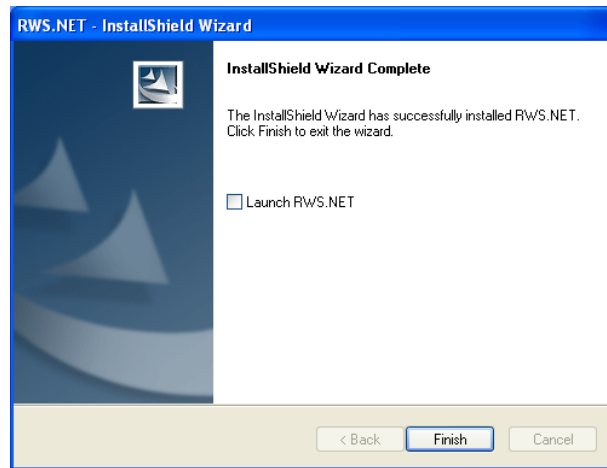


Figure 1-52: InstallShield Wizard Complete

- Uncheck **Launch RWS.NET** (Figure 1-52), and then click **Finish** to exit the installation.
- Remove the RWS software CD and restart the RRS Workstation.

1.2.6.2 Restore C:\LDAD

Review LDAD Data on the C:\drive to ensure it contains the PuTTY keys. If the PuTTY file is missing, skip to Section A.3.4. If not correct, copy the E:\LDAD folder to its proper location on the RWS:

- Copy the contents of the E:\LDAD folder to C:\LDAD. The C:\LDAD folder contains the PuTTY keys required for message transmission.
- Restart the RWS.

NOTE: Do not recreate PuTTY files. If these files are missing, contact the Direct Field Support staff at (703) 661-1268 for replacement. Recreating PuTTY files would require adding the new PuTTY files to all LDADs listed as primary, secondary, and tertiary transmission routes.

1.2.6.3 Enter Station Data

1.2.6.3.1 Verify Master Station Data

The Master Station Data is automatically entered when RWS.NET is first launched. Complete the following steps to enter Master Station Data. If the Master Station Data needs to be manually loaded due to missing or inaccurate data, use Section 1.2.6.3.3.

- Log on to the RRS Workstation as **RWS Site Administrator**.

2. Double-click on the **RWS.NET** desktop icon to start the RWS software. The *NOAA Warning* window will appear (Figure 1-53).

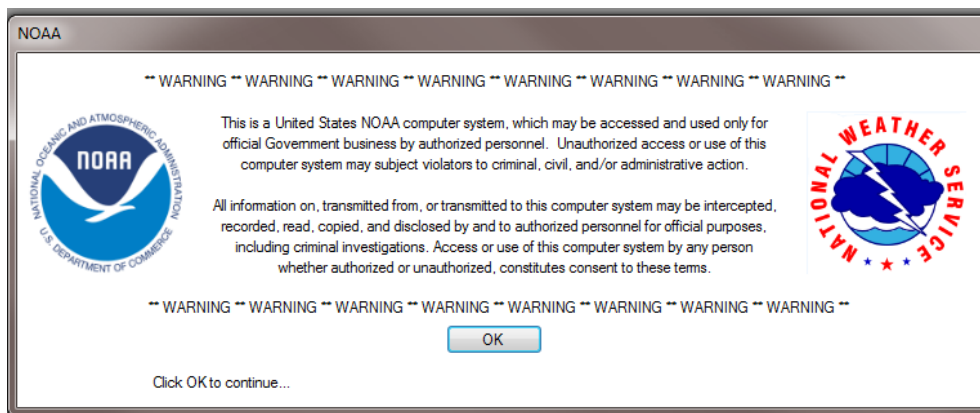


Figure 1-53: NOAA Warning Window

3. Click **OK** to dismiss the warning window. RWS will open with the *Master Station Data Initializing 2* window to indicate the Station WMO Number was used to initialize the Master Station Data (Figure 1-54).

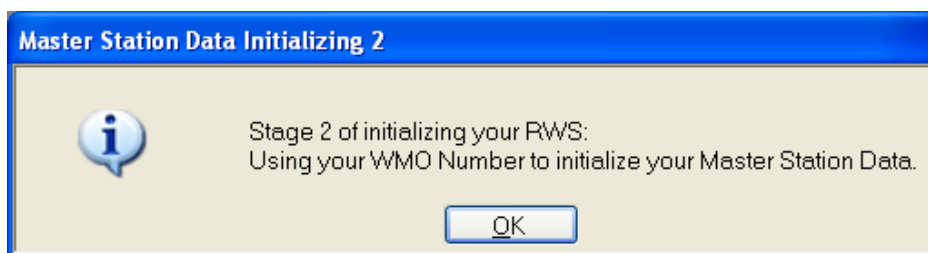


Figure 1-54: Master Station Data Initializing 2 Windows

4. Click **OK** to proceed. If initialization is successful, the *Master Station Data Initialized* window is displayed indicating Master Station Data updated. (Figure 1-55).

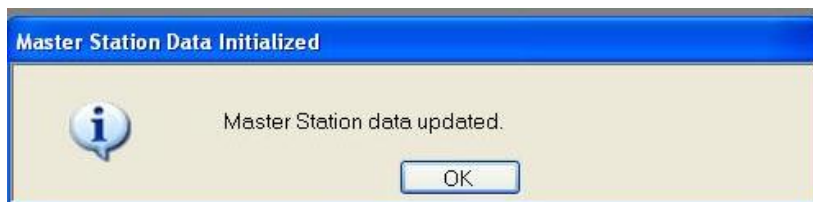


Figure 1-55: Master Station Data Initialized Window

5. Click **OK** to proceed.

1.2.6.3.2 Enter Local Station Data

If the RWS software indicates the Local Station Data has NOT been fully initialized, complete the following steps to enter Local Station Data:

1. If the *Local Station Data Not Initialized 1* window is displayed (Figure 1-56), click **Yes** to open the *Station Data Display* (Figure 1-59).

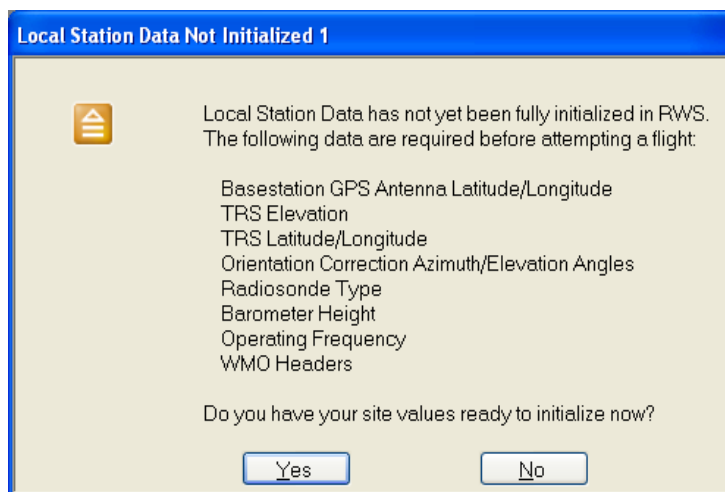


Figure 1-56: Local Station Data Not Initialized 1 Window

- NOTE:** In addition to the Station Data saved in Section 1.2.2, Station Data was collected during RRS deployment and cataloged in an RRS Site-specific Database on the NWSH Web site <https://ops13web.nws.noaa.gov/>. Compare the locally saved Station (backup) Data to data from the OPS13 Web site. If there are discrepancies, call the Direct Field Support staff at (703) 661-1268. Once discrepancies are resolved, confirmed Station Data shall be entered as a part of the RWS software installation.
- NOTE:** All RRS site Electronic Systems Analysts (ESAs) have automatic access to the RRS Site-specific Database operated by OPS13. Access to others will be granted by the Direct Field Support staff at (703) 661-1268.
- NOTE:** Ensure the Radiosonde Type selected is Vaisala RS92-NGP (P sensor), or Sippican LMS6 (P sensor), or Sippican Mark IIA(P sensor) in the *Station Data Display* window after installing RWS software.

2. Enter the following values (recorded in Section 1.2.2.5.2) for any field values missing from the *Station Data Display* (Figure 1-57).

Station Data Display			
Master			
Station Name:	HQTest1	Station Latitude (dd:mm:ss):	38:58:48
WMO Number:	69001	Station Longitude (ddd:mm:ss):	-77:28:48
WMO Region:	4	Station Elevation (m MSL):	85
Station ID:	KHQA	Base Pressure (hPa):	850
WBAN:	93734	Release Point Latitude (dd:mm:ss):	38:58:48
Responsible WFO ID:	KHQA	Release Point Longitude (ddd:mm:ss):	-77:28:48
AWIPS XXX (FAA) ID:	HQA	Release Point Elevation (m MSL):	85
		Last Updated:	11/19/2010 19:24:52
Local			
Release Point Pressure Correction (hPa) [derived]:		Radiosonde Type:	
Target Antenna Azimuth Angle (Deg):		Ground Receiving System:	
Target Antenna Elevation Angle (Deg):		Radiosonde Tracking Method:	
SPS GPS Antenna Elevation (m WGS84):		Barometer Height (m MSL):	
SPS GPS Antenna Elevation (m MSL):		Balloon Shelter Type:	
SPS GPS Antenna Latitude (N+/S- dd:mm:ss.ffff):		Balloon Gas:	
SPS GPS Antenna Longitude (E+/W- ddd:mm:ss.ffff):		Operational Frequency (MHz):	
TRS Elevation (m MSL):		Boottop Release:	No
TRS Latitude (N+/S- dd:mm:ss.f):		WMO Header (FZL):	UXUS97
TRS Longitude (E+/W- dd:mm:ss.f):		WMO Header (MAN):	USUS97
Orientation Correction Azimuth Angle (Deg):		WMO Header (SGL):	UMUS97
Orientation Correction Elevation Angle (Deg):		WMO Header (ABV):	UFUS97
Surface Observation (Obs.) Equipment Type:		WMO Header (JLG):	NXUS97
Surface Obs. Distance from Release Point (m):		WMO Header (DD1):	IUDD01
Surface Obs. Equipment Height (m MSL):		WMO Header (DD2):	IUDD02
Surface Obs. Bearing from Release Point (Deg):		Last Updated:	1/1/2000 00:00:00
<input type="button" value="OK"/> <input type="button" value="Cancel"/> <input type="button" value="Print"/> <input type="button" value="LDAD Info"/>			

Figure 1-57: Station Data Display (Example Only)

- Release Point Pressure Correction (hPa): The Release Point Pressure Correction is derived and is not entered. The Release Point Pressure Correction is the pressure difference between the baseline point and the release point (i.e., balloon shelter). The value is calculated and cannot be entered. The value is negative if the release point is higher than the baseline point.
- Target Antenna Azimuth Angle (Deg): Enter the Azimuth angle of the target antenna in degrees.
- Target Antenna Elevation Angle (Deg): Enter the Elevation angle of the target antenna in degrees.
- SPS GPS Elevation (m WGS84): Enter GPS antenna Elevation in Earth Ellipsoid Sphere in meters.
- SPS GPS Elevation (m MSL): Enter GPS antenna Elevation above mean sea level in meters.
- SPS GPS Antenna Latitude (N+/S- dd:mm:ss.ffff): Enter GPS antenna latitude in the prescribed format.

NOTE: South latitudes and west longitudes are preceded by a negative sign.

- SPS GPS Antenna Longitude (E+/W- ddd:mm:ss.ffff): Enter GPS antenna longitude in the prescribed format.
- TRS Elevation (m MSL): Enter TRS Elevation above mean sea level in meters.
- TRS Latitude (N+/S- dd:mm:ss.f): Enter TRS latitude in the prescribed format.
- TRS Longitude (E+/W- dd:mm:ss.f): Enter TRS longitude in the prescribed format.

- k. Orientation Correction Azimuth Angle (Deg): Not implemented, enter **0.00**.
 - l. Orientation Correction Elevation Angle (Deg): Not implemented, enter **0.00**.
 - m. Surface Observation (Obs.) Equipment Type: Select appropriate option.
 - n. Surface Obs. Distance from Release Point (m): Enter appropriate value in meters.
 - o. Surface Observation Equipment Height (m MSL): Enter appropriate value in meters.
 - p. Surface Obs. Bearing from Release Point (Deg): Enter appropriate value in degrees.
 - q. Radiosonde Type: Select appropriate option (Sippican LMS6, or Mark IIA, or Vaisala RS92-NGP).
 - r. Ground Receiving System: Select appropriate option. (This is the SPS type.)
 - s. Radiosonde Tracking Method: Select **GPS**.
 - t. Barometer Height (m MSL): Enter station specific value in meters.
 - u. Balloon Shelter Type: Select appropriate option.
 - v. Balloon Gas: Select appropriate option.
 - w. Operational Frequencies (MHz): Enter 1680 or the site-specific frequency in MHz used for first releases.
 - x. Rooftop Release: Select appropriate option.
 - y. WMO Header (FZL): Enter station specific value.
 - z. WMO Header (MAN): Enter station specific value.
 - aa. WMO Header (SGL): Enter station specific value.
 - bb. WMO Header (ABV): Enter station specific value.
 - cc. WMO Header (ULG): Enter station specific value.
 - dd. WMO Header (DD1): Not implemented, enter **IUDD01**.
 - ee. WMO Header (DD2): Not implemented, enter **IUDD02**.
3. Print the screen and have a second person verify all data entries.

1.2.6.3.3 Manually Enter Master Station Data

NOTE: Skip this section and go to Section 1.2.6.3.4 unless the Master Station Data is not pre-loaded or is not accurate (i.e. the AWIPS SID may be XXX). Also use this procedure for RRS equipment siting changes.

The Master Data portion of the *Master Station Edit* screen (not the same as WMO Station Data) is available on the OPS13 Web site.

1. Open the OPS13 Web site using noaa.gov e-mail username and password (https://ops13web.nws.noaa.gov/rrsupload/file_upload.file_upload_frame).
2. Select the Site Specific Data (for site X) from the pull-down list. Click **View Site Data**.
3. Print the Site Specific Data (for Site X) from the Web site.
4. Using the printed Site Specific Data from the OPS13 Web site, verify the Master Station Data (top of *Station Data Display* screen).
5. If the OPS13 Web site is unavailable, use the previously saved and printed data from Section 1.2.2.3 to verify the Master Station Data.
6. Enter the RRS Site Specific Data into the RWS Master Station Data as follows (Figure 1-58):

NOTE: The station data, including data to identify the station, and the station and release position data will appear in text. There are edit fields for the new values.

7. Close the RWS software.
8. Insert the CD for RWS software into the RWS computer.
9. Enter the new Master Station Data for the station and release positions. The station values reflect the position of the PDB. The release values reflect the position of where the balloons are released.
10. The Master Station Data Version field is helpful to determine if the RWS has loaded and is using the new values. An incremented version will be pre-filled, and does not need to be changed for the installation.

NOTE: Do not change the Station Name, WMO Region, Station ID, WBAN, WFO ID or AWIPS (FAA) ID (this information is pre-loaded). Make changes only if a field is not pre-loaded (displays XXXs) or data is inaccurate. This information is critical for successful data transmission.

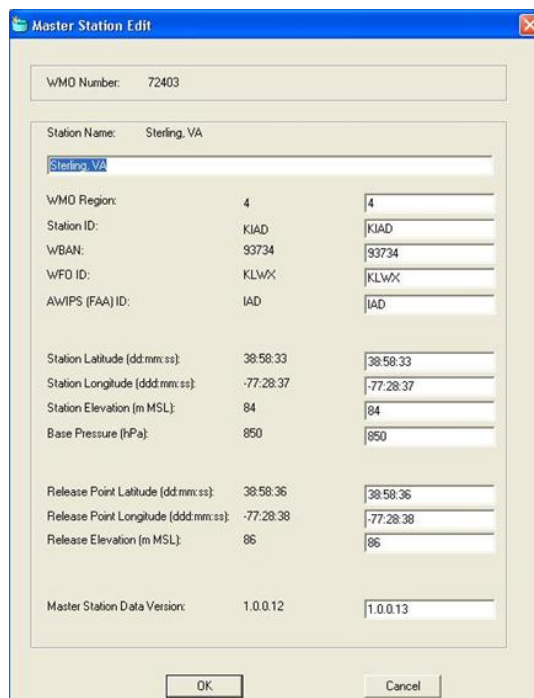


Figure 1-58: Master Station Edit (Example)

11. When the new data is entered, click **OK**. If successful, the following message will appear (Figure 1-59).

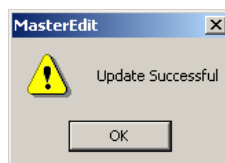


Figure 1-59: MasterEdit Update Successful Message

12. Click **OK** on the *MasterEdit* screen to close.
13. To verify the updated Master Station Data was successful, restart the RWS, go to **Offline Mode**, and open the *Station Data Display* menu (from the View Station Info menu item).
14. Recheck Master Station Data with Web site data (Figure 1-60).

Station Data Display			
Master			
Station Name:	HQTTest4	Station Latitude (dd:mm:ss):	38:58:48
WMO Number:	69011	Station Longitude (ddd:mm:ss):	-77:28:48
WMO Region:	4	Station Elevation (m MSL):	85
Station ID:	KHQQ	Base Pressure (hPa):	850
WBAN:	93734	Release Point Latitude (dd:mm:ss):	38:58:48
Responsible WFO ID:	KHQQ	Release Point Longitude (ddd:mm:ss):	-77:28:48
AWIPS XXX (FAA) ID:	HQQ	Release Point Elevation (m MSL):	85
		Last Updated:	10/9/2009 17:17:49

Figure 1-60: Master Station Data Display Menu (Example)

15. If the RWS Station Data appears to be in error, contact the SFSC Helpline at (703) 661-1268 or (703) 661-1293.
16. Close the writing *Wizard*.

1.2.6.3.4 Enter LDAD Data

Complete the following steps to enter LDAD Data:

1. Click **LDAD Info** on the *Station Data Display* to open the *LDAD Data Display* (Figure 1-61).

LDAD Data Display			
Type	Phone Number	Server IP	User Name
LAN			
Phone 1	NA		
Phone 2	NA		
Phone 3	NA		

Buttons: Edit, Edit, Edit, Edit, OK, Cancel

Figure 1-61: LDAD Data Display

- Click **Edit** for the LAN Type to open the *LDAD Data for LAN* window (Figure 1-62).

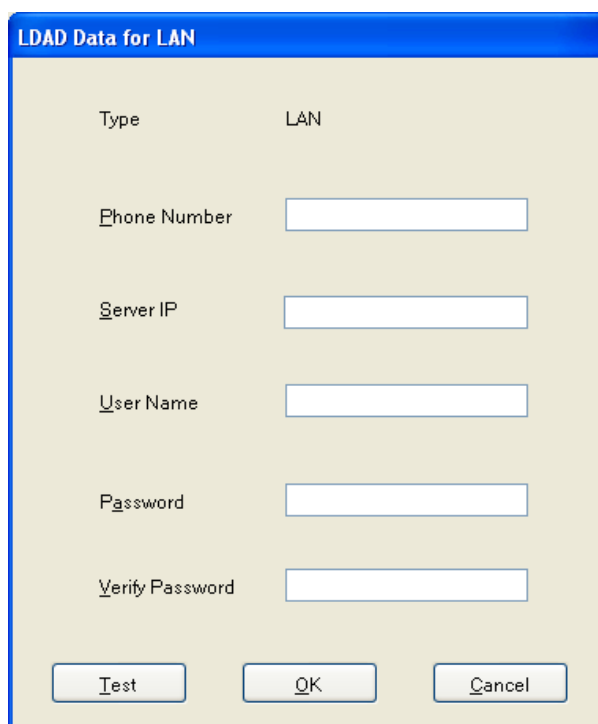
A screenshot of the 'LDAD Data for LAN' window. The window has a blue title bar with the text 'LDAD Data for LAN'. Inside, the 'Type' is set to 'LAN'. There are five input fields: 'Phone Number', 'Server IP', 'User Name', 'Password', and 'Verify Password'. At the bottom, there are three buttons: 'Test', 'OK', and 'Cancel'.

Figure 1-62: LDAD Data for LAN Window

- Complete the LDAD Data fields using the data recorded in Section 1.2.2.5.

NOTE: The Phone Number field for the LAN Type should be blank.

- Click **OK** to accept the changes and close the *LDAD Data for LAN* window.
- Edit the Phone 1, Phone 2, and Phone 3 Types.
- Once all LDAD Data has been entered, click **OK** to close the *LDAD Data Display*.
- Click **OK** to close the *Station Data Display*. The *Local Station Data Sufficient* window will display (Figure 1-63).
- Click **OK** to close the *Local Station Data Sufficient* window.

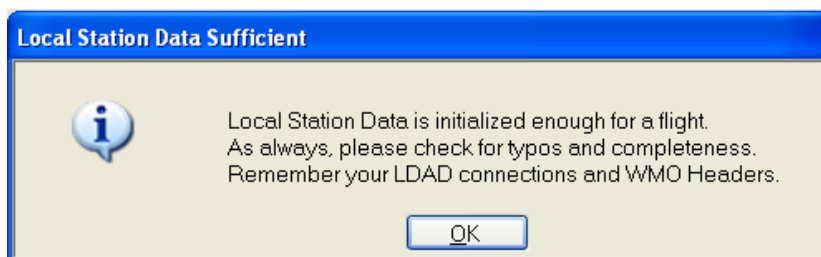


Figure 1-63: LDAD Station Data Sufficient

1.2.6.4 Restore Flight Data

In support of a new RWS software installation, flight files have been deleted from the E:\RWSBackup folder. If the following window appears (Figure 1-64), select **Skip Import** and continue to Section 1.2.6.5.

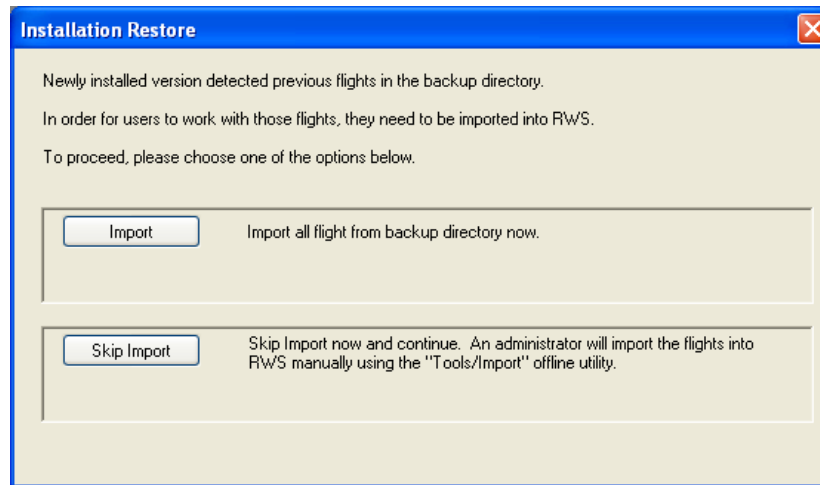


Figure 1-64: Installation Restore Window

NOTE: To avoid creating duplicate archived flight files for NCDC, flight files are not to be imported into RWS. See RRS Workstation User Guide, Section 16 for additional information.

1.2.6.5 Optional Pre-Flight “No Data” Message Test

The following test is optional. Skip this section and go to Section 1.2.7 if the site is going to perform a live test flight. After ghosting and prior to a flight, perform an LDAD/communications test to quickly verify that all passwords are correct, PuTTY keys are not corrupted, all communication lines are working, and flight data can be transmitted. If necessary, perform the following procedure:

1. Log on to the Workstation as an **RWS Observer**.
2. Start the RWS Software Program.
3. Send a “No Data” message to:
 - The LAN
 - Phone #1
 - Phone #2
 - Phone #3
4. Deselect all other choices except the one being tested.
5. View on an AWIPS terminal to ensure the messages were sent all the way through the system.

NOTE: When sending the “No Data” messages, you will have to select a different product for each test so that you can differentiate between the messages.

1.2.6.6 Add New RWS Users to RWS and Windows

Users must be added to the RWS to provide access to the RWS software. The RWS Site Administrator will use the User Administration Utility to create new users in Windows and RWS simultaneously. Complete the following steps to add user's accounts.

1. Click **Tools**, then **Utilities** to open the *RWS Software Utilities* window.
2. Click **Administrative Utilities**, then **User Administration Utility** (Figure 1-65).

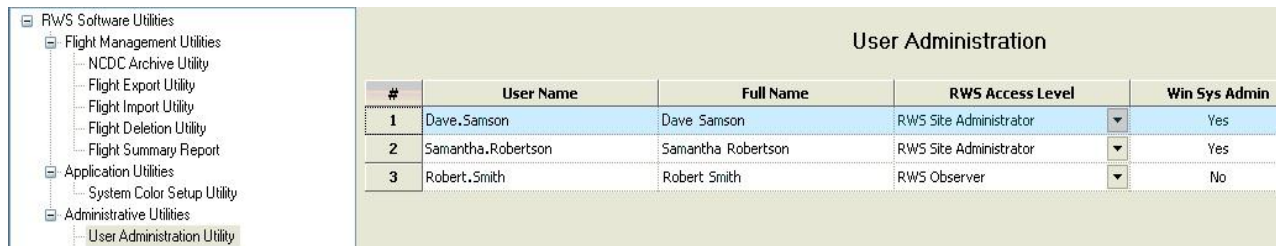


Figure 1-65: User Administration Utility Window (Example Only)

3. To add a user account, click the **Add** button in the User Administration Utility. The *Add User* window will appear (Figure 1-66).

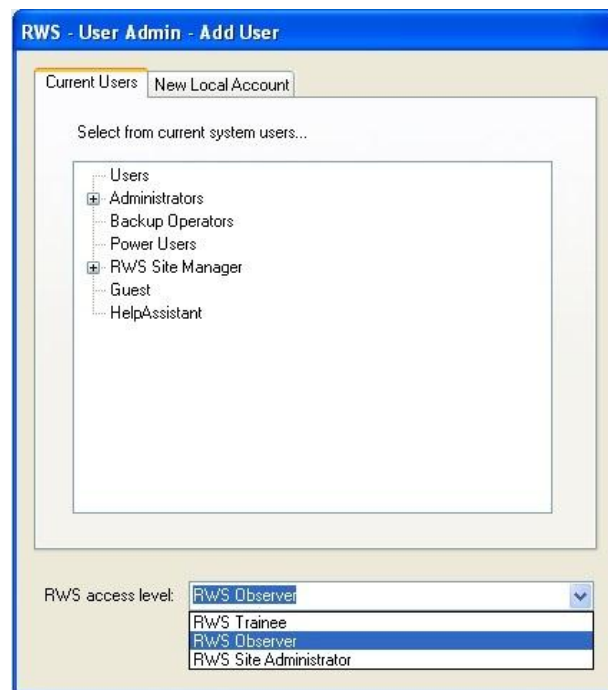


Figure 1-66: Non-Active Directory. Add User Window (Example Only)

4. If the user account already exists in *Windows* select the desired user from the **Current User** tab.
5. Since only one user already exists in *Windows*, select the **New Local Account** tab.
6. Add a unique User Name for the user added to the list.

NOTE: The **User Name** is the unique identifier used to log on to the RRS Workstation.

7. From the pull-down list, select the desired RWS Access Level. Users will be assigned to one of the three different levels of RWS access privileges, as follows:
 - **RWS Site Administrator:** A user who has complete access to the RWS software, Offline Maintenance Suite (OMS) and associated utilities. The User Admin Utility can only be used if the RWS Site Administrator has Windows Administrator privileges.
 - **RWS Observer:** A user who can conduct live flights, transmit coded messages and run a few offline utilities.
 - **RWS Trainee:** A user who can only run a simulated flight.
8. In the *Add User* window, click **OK**. The upper-right progress bar will indicate the process of adding the user to the RWS User Administration Utility.
9. Once the user has been added, the user will be listed in the User Administration Utility.
10. Repeat these steps for each RWS User.
11. When finished, select **Flight** and **Close**.

1.2.6.7 Install OMS Software

At this time, install OMS Software V2.1 in accordance with Section 1.3 before conducting an upper air flight.

1.2.7 VERIFY SOFTWARE INSTALLATION

1.2.7.1 Conduct an Upper Air Sounding

Conduct a live flight following the initial installation of the RWS Software V2.2/V2.3.1. See RRS Workstation User Guide for RWS Observers to conduct an upper air sounding (For a copy, go to: <http://www.ua.nws.noaa.gov/RRS.htm>, or use the RWS Help File function).

NOTE: Conducting a live flight is not necessary when only an RWS software maintenance release is being installed.

1.2.7.2 Capture the Flight

1. Double-click the **Capture Utility** shortcut to open the *RWS Capture Utility*.
2. Select the flight from the *RWS Capture Utility* pull-down menu (Figure 1-67).

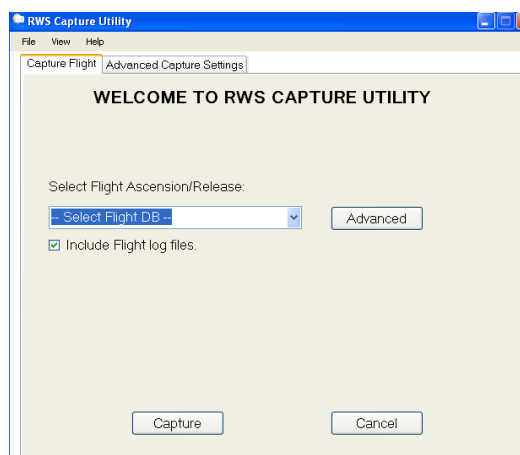


Figure 1-67: RWS Capture Utility

3. Click the **Capture** button.
4. Click **OK** when the *Capture Successful* message will appear.

1.2.7.3 Verify Message Transfer

1.2.7.3.1 Verify Message Accuracy in AWIPS

1. Verify the receipt of the coded messages by logging on to an AWIPS terminal or by viewing the coded messages at <http://www.weather.gov/data/>.

NOTE: To verify receipt of Pacific Region coded messages, Log on to:
<http://www.prh.noaa.gov/data/>.

2. Verify the accuracy of the coded messages.

1.2.7.3.2 Verify Messages to NCDC

Verify the successful reception of archived data to the NCDC ftp site. Visit <http://www1.ncdc.noaa.gov/pub/data/ua/RRS/YYYY> (where YYYY is the current year). Once at the Web site, find the log file representing the site by identifying the station ID and the year and month the data was transmitted. For example, *klwx_0801_log.txt* would contain the upload history for LWX for January of 2008.

1.2.8 OPTIMIZE WINDOWS DESKTOP

When time permits, optimize the *Windows* Desktop for best performance. Refer to Section 1.4 to perform this function.

1.3 OFFLINE MAINTENANCE SUITE INSTALLATION PROCEDURES V2.1

1.3.1 OVERVIEW

This section describes the installation of Offline Maintenance Suite (OMS) Version (V) 2.1.

OMS Software V2.1 is contained on the same CD as the RWS Software V2.2 or V2.3.1. The software is only available on CD directly from the Observing Systems Branch (OPS22, 301-713-2093 x107).

The RRS Workstation (RWS) is connected to a number of devices (SPS, TRS, RSOIS, PDB), that provide live data feeds. These devices can be tested offline using various programs collectively called the OMS.

The OMS is accessed through a desktop RRS Offline Menu icon that permits the user to select the port and device to test. One of the programs is Offline BIT (OBIT), which is used to test the TRS and UPS. Other non-OBIT programs test the SPS, RSOIS, PDB, and AWIPS/LDAD.

OBIT is both a test program and an RWS software simulator. OBIT is a simple Graphical User Interface (GUI) built on top of the Radiosonde Protocol eXecutive (RPX) library program. OBIT is essentially a Windows user interface display and logger connected to the various RRS Workstation device data streams (i.e., their serial ports or the equivalent ports of an external data pump). OBIT displays device status and enables running device Built-in-Tests (BIT) for hardware status and diagnostics.

NOTE: Even though the TRS hardware is unchanged, the OBIT Program for RWS V2.3.1 has been updated in OMS V2.1 (from 1.5.0 to 1.5.1) to stop running the TRS MCU Azimuth and Elevation drive tests – to avoid possible hardware damage.

1.3.2 OMS RELATED DOCUMENTS

- RRS Offline Maintenance Suite and OBIT Overview
- RRS Workstation User Guide for RWS
- RRS Workstation (RWS) Manual NWS EHB 9-720

1.3.3 INSTALL RWS OMS V2.1 SOFTWARE UNDER WINDOWS XP

1. Log on to the RRS Workstation as **RWS Site Administrator**.
2. Insert the RWS software CD (RWS.Net) into the RWS.
3. The RWS CD Auto install option will appear. Click **Cancel** (Exit *Setup* screen).
4. Double click on **My Computer**.
5. Right click on **CD drive (D:)**.
6. Select **Explore**. The CD file directory will appear (Figure 1-68).

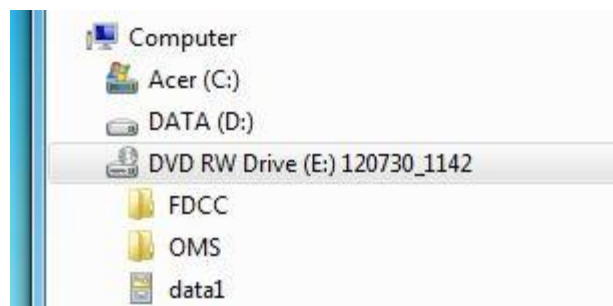


Figure 1-68: CD Drive File Directory

7. Double-click **OMS** Folder (Figure 1-69).
8. Double-click **OMSSetup** file.

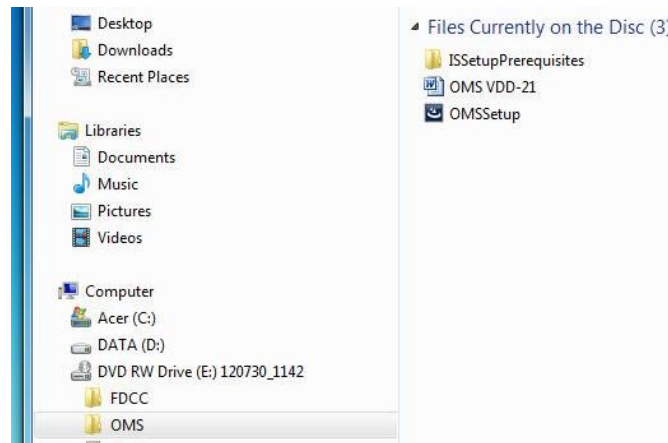


Figure 1-69: OMS Folder and Setup Screen

9. The *InstallShield Wizard* display will appear. (The program displays and extracts both Vaisala SPS and Sippican SPS Maintenance programs, but installs Vaisala first). Click **Install** (Figure 1-70).

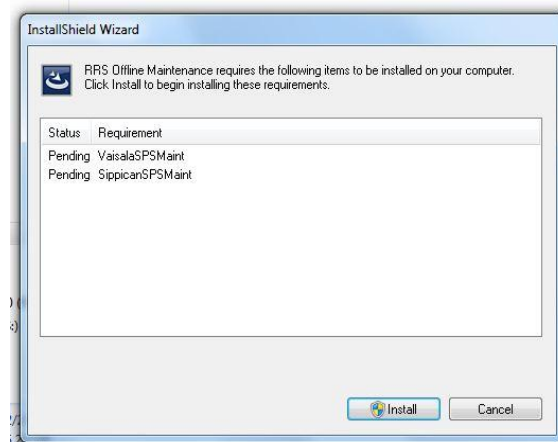


Figure 1-70: *InstallShield Wizard* with Both Vaisala and Sippican Maintenance Displayed

10. The SPS Maintenance *InstallShield Wizard* screen will appear to start Vaisala install. Click **NEXT**.

11. A Vaisala configuration setup screen will appear. Select **Serial Channel** connection type and **COM Port**. Enter **9**. Click **Next** (Figure 1-71).

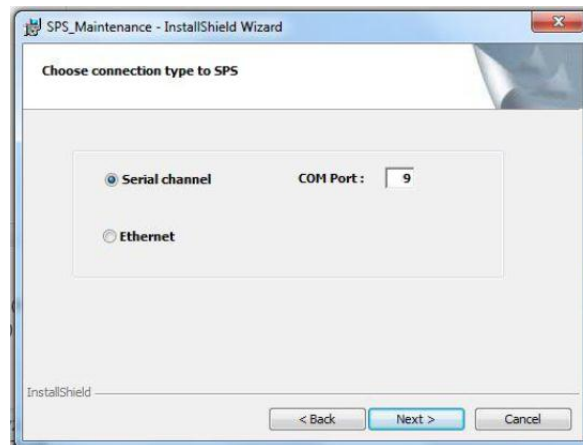


Figure 1-71: Vaisala Configuration Setup

NOTE: For Vaisala SPS Maintenance Software: The software must be uninstalled, then re-installed to change from ETHERNET to SERIAL CHANNEL or vice versa.

12. The *Ready to Install* Screen will appear (for Vaisala). Click **INSTALL** (Figure 1-72).

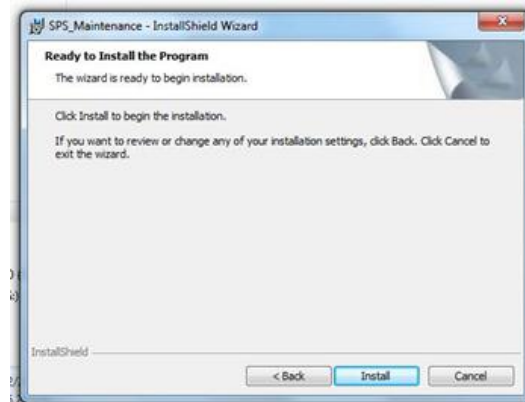


Figure 1-72: Vaisala SPS Maintenance Install

13. The *Installation Completed* screen will appear. Click **Finish**. This ends the Vaisala installation (Figure 1-73).



Figure 1-73: Vaisala SPS Maintenance Install Complete

14. The *SPS Maintenance Setup* screen will appear for the Sippican install. Click **OK** (Figure 1-74).



Figure 1-74: Sippican SPS Maintenance Install Begins

15. The *Begin the Installation* screen will appear (Figure 1-75). Click on **computer icon** button. Select **Program Group**. Do not change default settings.

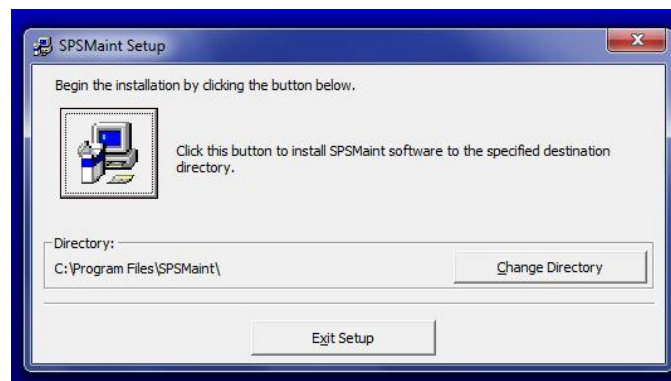


Figure 1-75: Sippican Install

16. Click **Continue**. The *Sippican SPS Maintenance Program Completion* screen will appear (Figure 1-76).

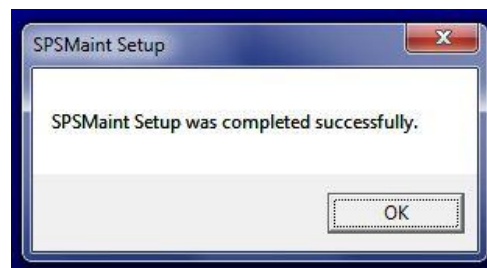


Figure 1-76: Sippican SPS Install Completed

17. Click **OK**. Setup configuration is complete for starting the OMS installation.

18. The *InstallShield Wizard* for OMS will appear. Click **NEXT**.

19. The *InstallShield Wizard* will appear for OMS. Click **Install** (Figure 1-77).

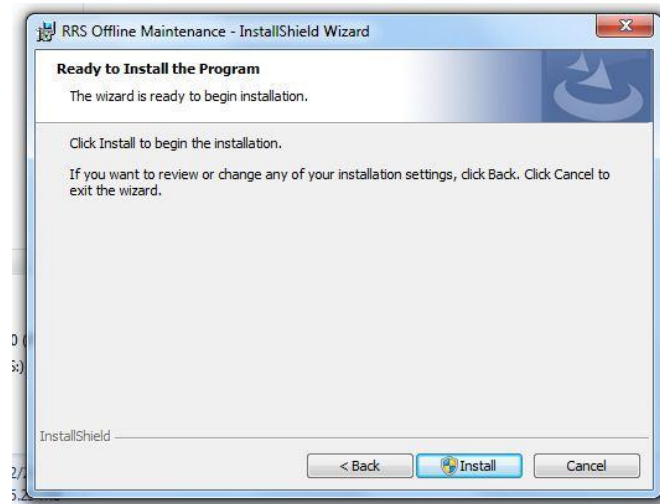


Figure 1-77: OMS Installation

20. The *InstallShield Wizard Completed* screen will appear (Figure 1-78).

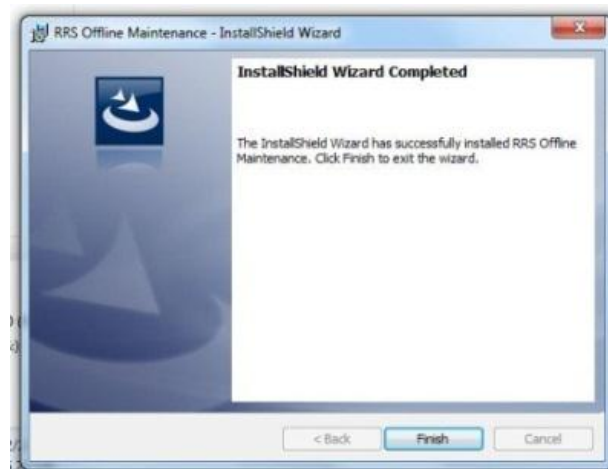


Figure 1-78: OMS Installation Completed

21. Click **Finish**. The OMS installation is complete.

22. Close all screens. Remove the RWS software CD from the CD-RW drive.

1.3.4 CONFIRM TRS STATION DATA

After OMS software installation, perform the following steps to confirm the TRS station data matches the specific data stored in TRS location files:

NOTE: The TRS must be initialized.

1. Double-click **RRS Offline Maintenance** icon to start the OMS.
2. Set up the COM ports by entering the Serial COM port numbers (shown in Table 1-3) into the *RRS Offline Maintenance Menu*.

Table 1-3: Default Port Settings

COM PORTS	
OMS MAINTENANCE	SERIAL COM PORTS
SPS Maint	9
RSOIS	6
PDB	7
TRS	1
UPS	8

3. Select **UPS Maintenance** from the *OMS* menu.
4. Power on the TRS by selecting the **Power On** option. Then close the *UPS Maintenance* window.
5. The *OBIT: OFFLINE BITS* screen will appear. Select **Yes**.
6. Wait for the Status to Display: 08 = ONLINE.
7. Select the **TRS Maintenance** option.
8. Click the **Mode** menu and select the **Terminate** option.
9. Click the **Setup** menu and select the **Station Data** option.
10. Load the TRS Station Data (if Station Data menu fields are not correct) by entering the site's station latitude and longitude (to one decimal or second) as well as the applicable TRS Azimuth and Elevation values. See Figure 1-79 for an example of TRS Station Data. Use Station Data recorded in Sections 1.1.2.3, or 1.2.2.3.

NOTE: A complete set of TRS Station Data is available for reinstallation from the Configuration Management database at: <https://ops13web.nws.noaa.gov/>.

NOTE: All RRS Site Electronic Systems Analysts (ESAs) have automatic access to the RRS Site-specific Database operated by OPS13. Access to others will be granted by the Direct Field Support staff at (703) 661-1268.

The screenshot shows a window titled "Station Data" with a blue header bar. Inside, there are three main sections. The first section is "RRS Station ID (Kxxx)" with a text box containing "KSTB". The second section is "TRS Position" with three text boxes: "Latitude (D/M/S.x)" containing "38/58/43.0", "Longitude (W-, E+)" containing "-77/28/39.0", and "Altitude (m) (MSL)" containing "89.9". The third section is "TRS Bearing-To" with a table structure. The table has two columns, "Az" and "El", and three rows: "Target", "Baseline area", and "Release area". Each cell in the table contains a text box with the value "0". At the bottom of the window are two buttons: "OK" and "Cancel".

	Az	El
Target	0	0
Baseline area	0	0
Release area	0	0

Figure 1-79: Station Data Window (Example Only)

11. Click **OK**.
12. Close the OBIT. The *Offline Maintenance* screen will return.
13. Click **Exit**.
14. Close the **OMS**.

1.4 VAISALA SPS ONLY - REINSTALL VAISALA SPS MAINTENANCE SOFTWARE

This procedure is for a laptop only. The Sippican maintenance software communications protocol uses a Serial Channel. The Vaisala maintenance software communications protocol uses Ethernet. If switching from a Sippican SPS to a Vaisala SPS, or if Ethernet was not selected, the Vaisala maintenance software (VaisalaSPSMaint only) must be uninstalled and reinstalled on the maintenance laptop.

Reinstallation should be made on the maintenance laptop to change the Vaisala communication protocol from Serial Channel to Ethernet.

Go to RRS Maintenance Note 9, to uninstall and reinstall VaisalaSPSMaint software on a laptop, and to select the **Ethernet Connection Type**. Section A.11 of RRS Maintenance Note 9 applies to laptops running under *Windows XP* operating system.

1.5 OPTIMIZING THE WINDOWS DESKTOP FOR RWS

1.5.1 WINDOWS DESKTOP SETUP FOR RWS

RRS Workstations (RWS) usually default to the *Windows Classic* theme when added to a domain. The *Windows Classic* theme can cause unexpected behavior when running the RWS software. Execute the following steps for best RWS software performance.

1.5.2 SET THE VISUAL EFFECTS OPTION

This section must be completed by an RWS Site Administrator. Complete the following steps to set Visual Effects to Adjust for best appearance.

1. Log on to the RRS Workstation as **RWS Site Administrator**.
2. Click **Start**.
3. Right-click on **My Computer** to display a drop-down menu, and then click on **Properties** to open the *System Properties* window.
4. Click the **Advanced** tab, and then click **Performance|Settings** to open the *Performance Options* window.
5. Click the **Visual Effects** tab, and then select the **Adjust for best appearance** option.
6. Click **OK** to accept the change and close the *Performance Options* window.
7. Click **OK** to close the *System Properties* window.
8. Log off of the RRS Workstation.

1.5.3 SET THE DISPLAY OPTIONS

This section should be completed by all RWS users. Complete the following steps to set Visual Effects to Adjust for best appearance.

1. Log on to the RRS Workstation as **RWS User**.
2. Right-click on the **Windows Desktop** to display a drop-down menu, and then click on **Properties** to open the *Display Properties* window.
3. Click the **Themes** tab, and then set the Theme value to **Windows XP**.
4. Click the **Appearance** tab, and set the *Windows* and *buttons* value to *Windows XP* style.
5. Click the **Effects** button to open the *Effects* window (Figure 1-80).
6. Select all options except Use large icons, and then select the **Fade effect** and **Standard** option.

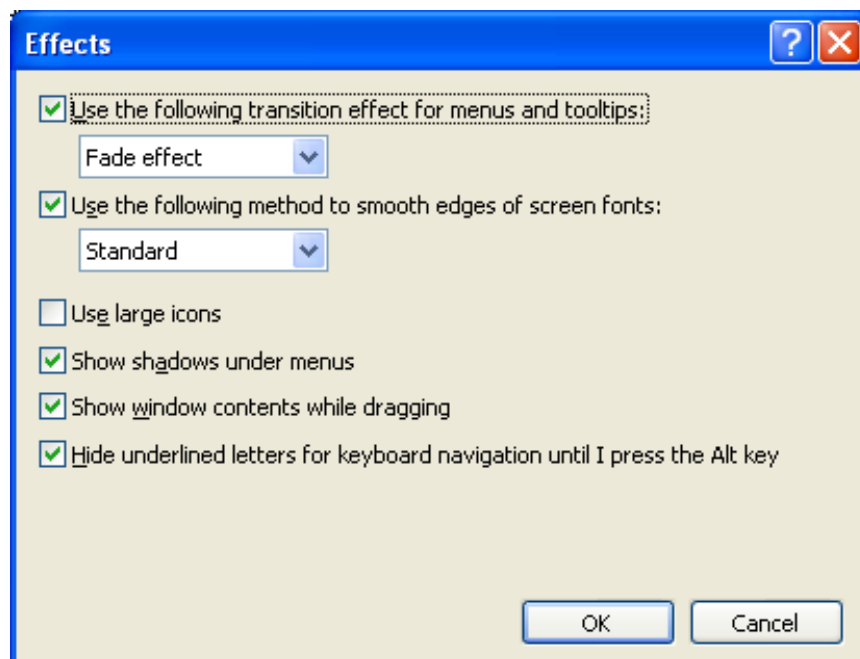


Figure 1-80: Effects Window

7. Click **OK** to close the *Effects* window.
8. Click **OK** to close the *Display Properties* window.
9. Log off of the RWS.

SPECIAL APPLICATION PROCEDURES

1.6 RWS SOFTWARE PROGRAM GENERAL INFORMATION

This section provides general information on RRS Workstation (RWS) Software Build.

1.6.1 GENERAL DESCRIPTION OF THE RRS OPERATING SYSTEM

This procedure is for installing (Ghosting) the RRS operating system as configured for the RWS into a new or replacement RWS computer, or to fix problems with a failed operating system. RRS operating system reinstallation is used in resolving problems between RWS software and hardware before returning an RWS PC to the National Reconditioning Center (NRC) for repair, and to return the operating system to an authorized configuration if the current configuration is in doubt.

NOTE: The procedure for installing the RRS operating system is the same for initial installation and reinstallation, except reinstallation requires that Site Data be backed up prior to installing a new version of the RRS operating system. A complete set of RWS Site-specific Data is available for reinstallation from the Radiosonde Replacement System (RRS) Configuration Management (CM) database at: <https://ops13web.nws.noaa.gov/>.

Additional driver support for the RRS Workstation (short for RWS hardware and software assembly) is included in the RRS operating system load as well as special modifications necessary to make the operating system compatible with the RWS hardware. Other differences between the NWS and commercial operating system versions involve security protocols required by DOC/NOAA/NWS. Unique user documentation and hardware diagnostics are also included in the RRS operating system. The software issued by NWS for the RRS program is only licensed for use on RWS computers. Use on any other computer is unauthorized.

NOTE: RWS computers are received from the (National Logistics Support Center) NLSC without any bootable software on the hard drive. Field sites should expect a boot or media failure message followed by a system halt when the computer is first turned on. A failure message is normal.

The RWS uses two hard drives. One hard drive is inside the computer and the other is an external USB hard drive. This procedure loads software onto the hard drive inside the RWS PC only. No preparation of the hard drive is required prior to initiating this procedure. It does not matter what the contents of the drive are; the drive requires no wiping, partitioning, or formatting.

Hard drive preparation takes less than 15 minutes to finish. Installing the RRS operating system does not install any RWS (Build) software.

CAUTION

All information stored on the internal hard drive prior to installing the RRS operating system will be permanently erased.

1.6.2 RWS SOFTWARE DESCRIPTION

The RWS Program (Build) Software collects and processes upper air data from radiosondes. The system is interactive and allows a high degree of control over the display, edit, and transmission of data products. The RWS Software runs the following functions:

- Flight software applications
- Control operations
- Limited telemetry analysis

The RWS Software includes a user interface based on the *Windows* model. The software provides flight management and other data cataloging and storage capabilities using an Structured Query Language (SQL) relational database. The software is built on the concept of pre-processor software (i.e., SPS-based) and main processor software (i.e., Workstation-based). The pre-processor software consists of all the operational modules necessary for data collection and conversion into meteorological values. The main processor software consists of all operational modules necessary to perform the following functions:

- Interfaces with the Radiosonde Surface Observing Instrumentation System (RSOIS) and Precision Digital Barometer (PDB) to acquire surface meteorological data
- Interfaces with the SPS to acquire flight meteorological data from the radiosonde
- Interfaces with the Telemetry Receiver System (TRS) to control its pointing direction
- Interfaces with NWS Headquarters (WSH) to receive Master Station Data
- Provides archive data to the National Climatic Data Center (NCDC)
- Performs quality analysis of SPS-acquired data and on generated processed data
- Processes data from the SPS into archive products and coded messages that are transmitted to the meteorological community via the Advanced Weather Interactive Processing System (AWIPS)
- Stores SPS-forwarded and Workstation-processed data in a local database
- Provides user interface functions to support pre-flight, baseline, release, flight, and "after termination" activities
- Provides limited analysis-support tools
- Supports live flight, rework, and simulated flight operating modes

The primary components required for RWS Software installation on the RWS are:

- RWS with operating system installed
- RWS Software Installation CD
- Station Data for TRS and associated equipment
- LDAD contact information
- Initial Ascension Number
- RWS Software Maintenance

1.6.3 RWS PROGRAM DESCRIPTION

- **RWS Software:** RWS.Net is the main application program to make an upper air observation in the RRS (Figure 1-81).



Figure 1-81: RWS.NET Desktop Icon

- **Capture:** Capture is a program that collects the diagnostic information used to troubleshoot a problem or bug with the RWS software (Figure 1-82).

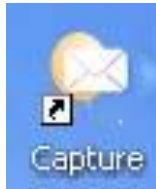


Figure 1-82: Capture Display Icon

- **Offline Maintenance Suite (OMS):** OMS is a utility that tests the hardware devices connected to the Workstation (Figure 1-83).

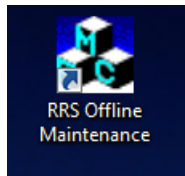


Figure 1-83: RRS Offline Maintenance Icon

- **RRS Offline Maintenance Menu:** See Figure 1-84.

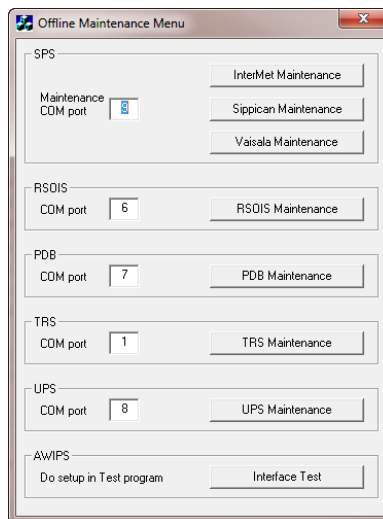


Figure 1-84: OMS Offline Maintenance Menu

FILES AND DIRECTORIES OF RWS APPLICATION SOFTWARE	
C:\RWS\RWS\Capture.NET.exe	The Capture Utility: This utility collects diagnostics for troubleshooting RWS.
C:\RWS\RWS\RWS.Shell.exe	The RWS software executable.
C:\RWS\RWS\Calibration Files	Directory for calibration files for radiosondes, which do not self-calibrate or transmit their calibration.
C:\RWS\RWS\Data Files	Directory for the database files used by RWS.
C:\RWS\RWS\LOGS	Directory for log files generated by RWS, if any.
C:\RWS\RWS\Radiosondes	Directory for radiosonde vendor-specific DLL's.

1.7 RWS SOFTWARE DATABASE TABLES

1.7.1 HQSTATION_2005.MDF

This database file has a copy of the Master Station Data supplied from WSH. It is imported into the RWS software using the Master Station Data Update Offline Utility in RWS software.

1.7.2 RRSDB_2005.MDF

This database file contains the following:

RRSDB_2005.MDF	
tbl_Administrative	The pre-flight Administrative Data across all flights.
tbl_Equipment	The pre-flight Equipment Data across all flights.
tbl_FlightSummary	The Flight Summary Data across all flights.
tbl_LDAD	The LDAD connection information.
tbl_PFSurfaceObservation	The pre-flight Surface Data across all flights.
tbl_PrimaryKey	The list of all flights in the directory, with flight identifying information.
tbl_StationCurrent	The Station Data used by each flight across all flights. This data is a snapshot of the local and master station data when the flight was flown.
tbl_StationLocal	The Local Station Data for the station.
tbl_StationMaster	The Master Station Data for the station.

Any other tables are used internally, or are not used. Do not modify the remaining tables.

1.7.3 RRSFLIGHTTEMPLATE_2005.MDF

This database file has the unpopulated versions of a flight database. It is copied at the beginning of a flight, to create all the tables. See Section 1.7.4, *Flight Databases* for more information about the tables.

1.7.4 FLIGHT DATABASES

This database file contains the following:

FLIGHT DATABASES	
tbl_Administrative	The pre-flight Administrative Data for the flight.
tbl_CalibrationData	A table with a BLOB for the calibration data if any.
tbl_CheckMessage	The check messages.
tbl_CodedMessage	The RADAT and WMO Coded messages.
tbl_Equipment	The pre-flight Equipment Data for the flight.
tbl_FlightRadioSonde	A table for a BLOB of the radiosonde DLL used when the flight was flown.
tbl_FlightSummary	The flight summary data for the flight.
tbl_LDAD	The LDAD connection information at the time that the flight was flown.
tbl_Levels	The Levels.
tbl_PFSurfaceObservation	The pre-flight Surface Data across all flights.
tbl_PrimaryKey	The flight identifying information for this flight, which is in the tbl_PrimaryKey table of the RRSDB.mdb database file.
tbl_ProcessedPos	The processed Position Data from the TRS and the PTU Data.
tbl_ProcessedPTU	The processed PTU Data.
tbl_RawPos	The raw Position Data from the TRS.
tbl_RawPTU	The raw (empirical from the radiosonde sensors) PTU Data.
tbl_SmoothedWindAndPos	The processed position data from the GPS.
tbl_StationCurrent	The Station Data used by each flight for the flight. This data is a snapshot of the local and Master Station Data when the flight was flown.
tbl_StationMaster	The Master Station Data for the station when the flight was flown.
tbl_StatusMessage	The status messages.
tbl_SurfaceObservation	The RSOIS Data.
tbl_SurfacePressure	The PDB Data.
tbl_TRS_STATUS	A history of TRS status blocks.
tbl_UnSmoothedWindAndPos	The raw GPS Data.

Other tables are used internally, or are not used. Do not modify any of the remaining tables.

1.8 RWS SOFTWARE UTILITIES FOR USERS

A Site Administrator or Observer/Operator uses utilities to accomplish numerous tasks and functions, such as archival, export, import, database management, and system setup. The RWS software (Figure 1-85) allows users use the *Tools* option and select **Utilities** in the Offline Mode. RWS Software Utilities has three major subsets:

- Flight Management Utilities
- Application Utilities
- Administrative Utilities

NOTE: Personnel logging onto the RWS software as Trainee are locked out from accessing RWS Software Utilities.

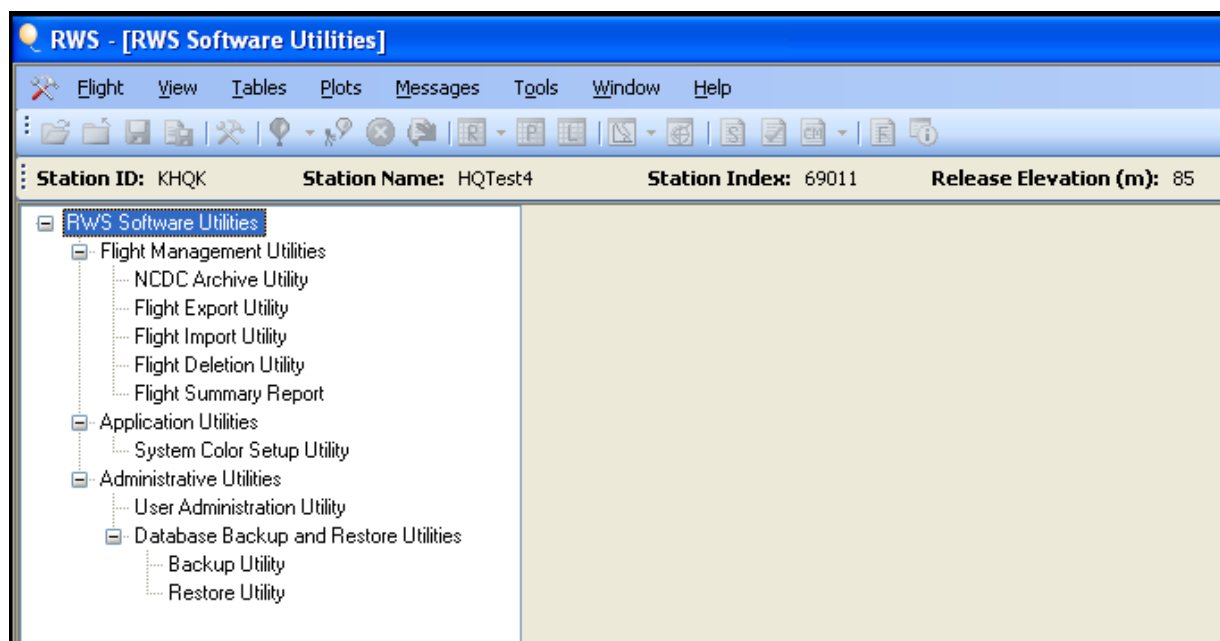


Figure 1-85: RWS Software Utilities

1.8.1 FLIGHT MANAGEMENT UTILITIES

Flight Management Utilities has five options (Figure 1-85). An Observer or Site Administrator may open the following utilities or tool areas:

- NCDC Archive Utility
- Flight Export Utility
- Flight Import Utility
- Flight Deletion Utility
- Flight Summary Utility

1.8.1.1 NCDC Archive Utility

Click the **NCDC Archive Utility** option (Figure 1-86). This utility allows the operator to create an NCDC archive to send to NCDC.

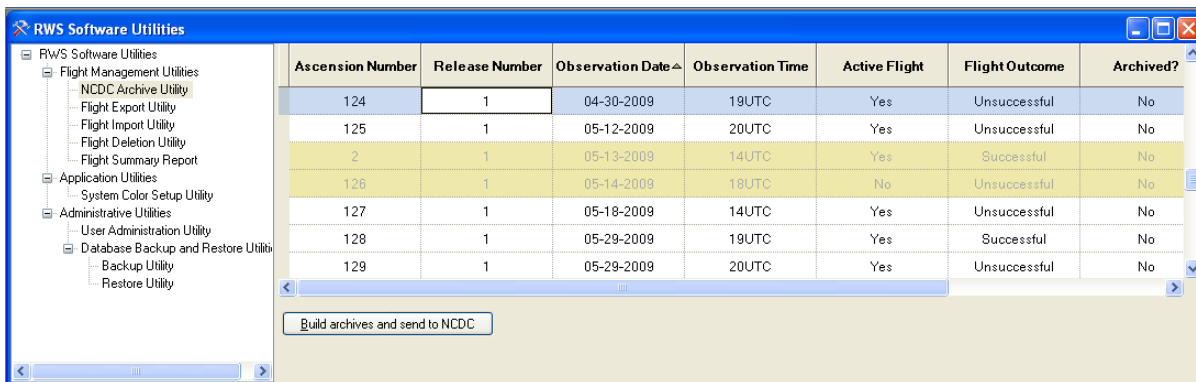


Figure 1-86: NCDC Archive Utility (Example)

1.8.1.2 Flight Export Utility

Click **Flight Export Utility** (Figure 1-87). The operator may use this utility to send file or flight information to another subdirectory or location.

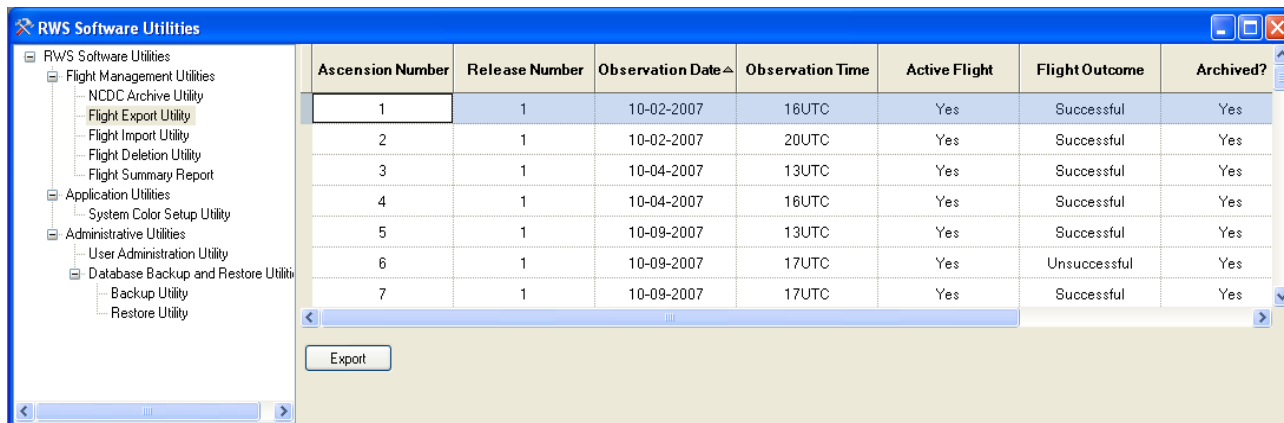


Figure 1-87: Flight Export Utility (Example)

1.8.1.3 Flight Import Utility

Click **Flight Import Utility** (Figure 1-88). The Flight Import Utility allows the operator or user to import flights from different subdirectories or locations for quality control or use for training purposes.

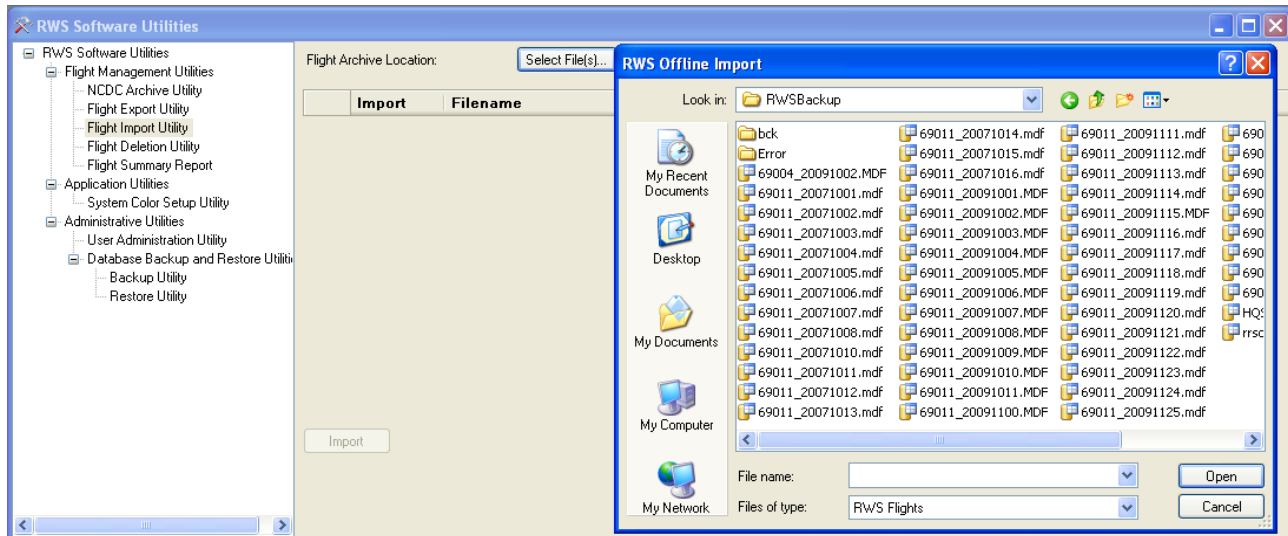


Figure 1-88: Flight Import Utility (Example)

1.8.1.4 Flight Deletion Utility

Click **Flight Deletion Utility** (Figure 1-89). The Flight Deletion Utility allows the operator or user to delete unsuccessful or non-archived flights from the database.

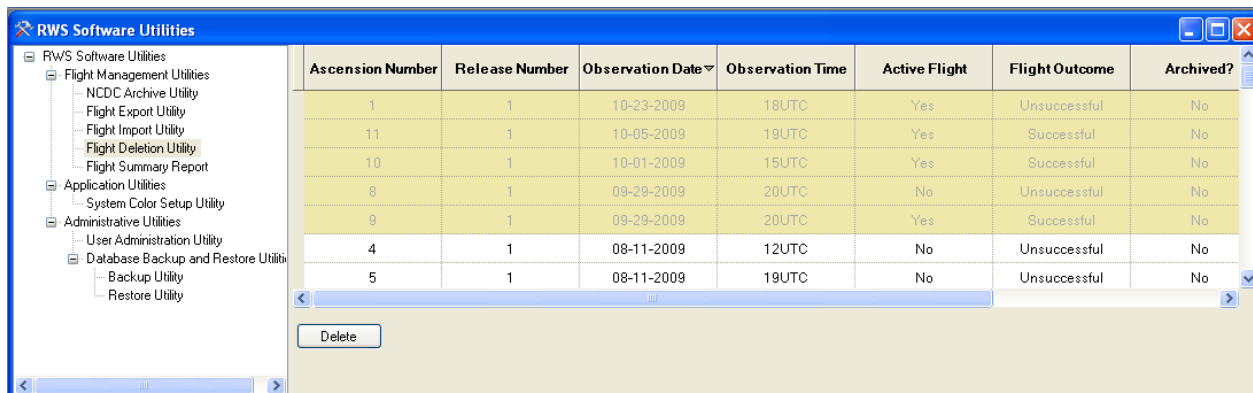


Figure 1-89: Flight Deletion Utility (Example)

1.8.1.5 Flight Summary Report

Click **Flight Summary Report**. A window similar to Figure 1-90 will appear. The *Flight Summary* screen provides all monthly report information. The information can be saved to a file and loaded into a spreadsheet. Sending this file will send in the monthly reports.

Select filter criteria and click Update.

Show: Successful Select: Various Update

Select flight(s) from list below to view averages.

Flight Averages		Average Ascent Rate (m/min)		Missing & Rejected Percentages	
Flight Duration:	55.10	Surface to Termination:	309.51	Pressure:	0.09
Slant Range:	1760966.02	Surface to 400 hPa:	324.54	Temperature:	0.82
Termination GPH from PTU:	17140.04	400 hPa to Termination:	299.70	RH:	0.12
Termination Pressure:	84.40	Surface to 100 hPa:	310.61	Wind Data:	0.03
Last Wind GPH:	17140.04	100 hPa to Termination:	293.47		
Minimum Temperature:	-65.84				
Nozzle Lift:	666.00				

Flight	Station	Asc	Rel	Obs. Date	Obs. Hour	Active	Radiosonde Serial	Balloon Manufacturer	Ballo Num
133:1 06-16-2009 19	KHQK	133	1	06-16-2009	19	Yes	6666666666	1 (Kaymont-Totex)	44444444
132:1 06-09-2009 17	KHQK	132	1	06-09-2009	17	Yes	5555555555	1 (Kaymont-Totex)	55555555
131:1 06-09-2009 14	KHQK	131	1	06-09-2009	14	Yes	5555555555	1 (Kaymont-Totex)	55555555
130:1 06-09-2009 13	KHQK	130	1	06-09-2009	13	Yes	5555555555	1 (Kaymont-Totex)	55555555

View Print Save As File

Figure 1-90: Flight Summary Report (Example)

1.8.1.6 Individual Flight Summary Display

The individual *Flight Summary* display shows critical flight performance data. Select the desired flight and then click **View**. A *Flight Summary* display similar to Figure 1-91 will appear.

Flight Summary

Meta Data		Tropopause Levels			
Level	Elapsed Time (min)	Height (m)	Pressure (hPa)	Temperature (C)	
First:	35.67	11552.0	208.41	-61.4	
Second:	N/A	N/A	N/A	N/A	
Third:	N/A	N/A	N/A	N/A	

Mean Low Level Wind		
Level	Speed (knots)	Direction
Surface to 5000 feet:	21.3	177.5
5000 to 10,000 feet:	24.7	228.2

Max Wind				
Level	Elapsed Time (min)	Speed (knots)	Direction	GPH (m)
Primary:	36.68	70.4	223.7	11885.0
Secondary:	N/A	N/A	N/A	N/A

Ascent Rate (m/min)		Raw Data	
Surface to Termination:	309.5	Total PTU Intervals:	3306
Surface to 400 hPa:	324.5	Total Wind Intervals:	3306
400 hPa to Termination:	299.7	Missing & Rejected Pressure:	3
Surface to 100 hPa:	310.6	Missing & Rejected Temperature:	27
100 hPa to Termination:	293.5	Missing & Rejected RH:	4
		Missing & Rejected Wind Data:	1

Freezing Level Crossings	
L:	11665.2 ft 3555.5 m
M:	N/A N/A
H:	N/A N/A
Additional Freezing Levels: N/A	
-20 deg C Height:	21242.7 ft 6474.8 m

Buttons: Refresh, Print, OK

Figure 1-91: Flight Summary Display (Example)

1.8.2 APPLICATION UTILITIES

Application Utilities allow the user to look at the color setup being used with the system for tabular data. A Site Administrator or Observer/Operator may change these profiles. Select **System Color Setup Utility** (Figure 1-92). Changing colors requires clicking only the left mouse button on the desired color and selecting a color when a window appears.

RWS Software Utilities

- RWS Software Utilities
 - Flight Management Utilities
 - Application Utilities
 - System Color Setup Utility**
 - Administrative Utilities

Color Selection Buttons:

- Edited Data
- Rejected Data
- Missing Data
- Wait For Release Background
- Wait for Release Text

☐ Use alternate character representation of data status in grids (Section 508 compliant)

Buttons: Update, Restore Defaults

Figure 1-92: System Color Setup

1.8.3 ADMINISTRATIVE AND DATA BACKUP AND RESTORE UTILITY

Administrative Utilities allow the operator to load calibration files and backup and restore files or flights. It also allows an Observer/Operator or Site Administrator to change or reconfigure the Pre-flight Information used in the *Station Data* window and the *Pre-flight Displays*. This function also allows a Site Administrator to backup, restore, or unload (move) flights (Figure 1-93).

- **Backup:** Normally, flights are automatically copied to the standard backup directory. (This will likely be on the E:\drive or C:\drive if E: is not available.) This utility allows a Site Administrator to manually back up any list of files and may also back up to a different directory, however, Restore Utility will only restore from the standard backup directory.
- **Restore:** This function will take the files in the backup directory, and copy them into the main database area. Files will only be restored from the standard backup directory, and all files will be restored.
- **Move:** Running this utility copies all flights older than 120 days to a selected directory, and removes those flights from the RWS software.

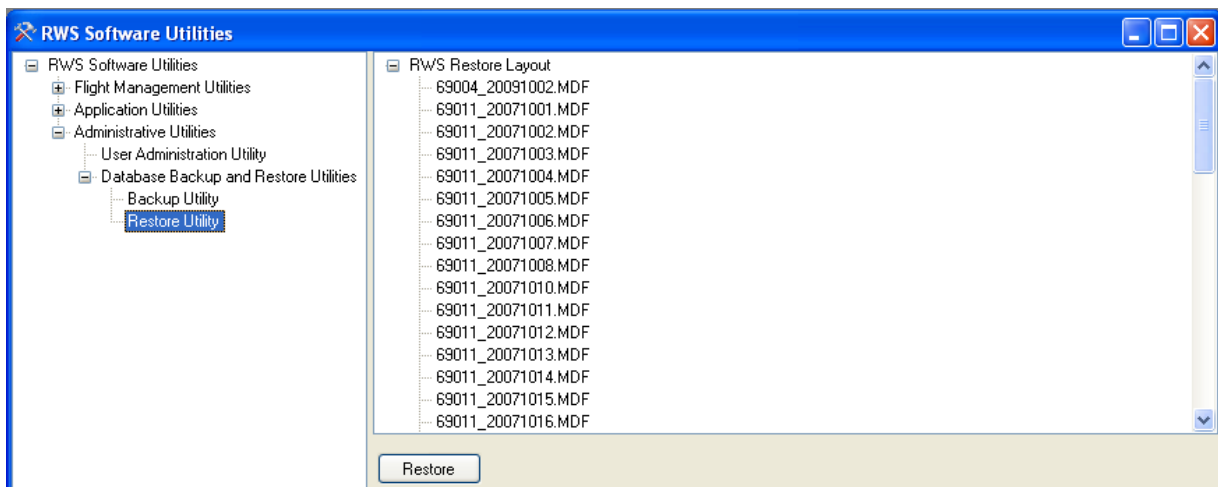


Figure 1-93: Restore Utility (Example)

1.9 RWS-LDAD FTP INITIAL INSTALLATION

LDAD interface activation instructions are in Engineering Handbook 13, Section 2.0, [AWIPS RWS-LDAD System Administration Note 15](#). The following procedures are provided for the initial installation of a secure ftp for LDAD, including using PuTTY to load public and private keys.

NOTE: Do not use leading zeros for PuTTY sessions or for station/LDAD information. A leading zero implies Octal. Example: At the PuTTY window, typing in an IP address with leading zeros (*198.206.034.011*) will cause an error. Numbers without leading zeros must be used (*198.206.34.11*).

1.9.1 RWS-LDAD INTERFACE ACTIVATION INSTRUCTIONS

The RRS will interface with AWIPS via LDAD. This interface will replace the existing dial-in MicroART interface, which is currently serviced by the LDAD executable suaReceiver, running on the LS1 (LDAD server).

The Workstation sends data to LDAD across a LAN and/or via a phone line (dial-in). The transmission is one-way only: LDAD does not send any data or application level acknowledgments to the RRS. Once the products are inside the firewall, they are processed by a LDAD pre-processor called preprocessRRS.pl.

NOTE: A complete set of AWIPS-LDAD Data is available for reinstallation from the CM database at: <https://ops13web.nws.noaa.gov/>.

The preprocessRRS.pl performs several processing activities on the data files (storage into the Informix fxatext database, product dissemination to all WFO sites via the NCF/SBN, and product archival).

The main purpose of [AWIPS-LDAD System Administration Note 15](#) is to provide activation instructions for the RWS-LDAD interface and the following:

- Describe the processing flow of data from the RWS through LDAD and into AWIPS
- Provide updates to reflect the new Upper Air Logistics (ULG) product introduced by the RRS program

A site must have AWIPS Build OB5 or higher operational to have all the necessary files and AWIPS software to process RRS data via LDAD before the interface can be activated.

In addition, firmware for the LDAD modem must be Version 8.1 to be compatible with a RWS modem. There are several files that must be set up in order for the software to function correctly. These files are described in [AWIPS RWS-LDAD System Administration Note 15](#).

1.9.2 LDAD DELIVERY

The RWS delivers products to LDAD in one of two ways:

- SFTP over the local (site) LAN, used by sites where upper air and AWIPS LDAD are co-located
- Dial-in using a PPP connection to perform SFTP file transfer of products, used at remote sites where upper air information is dialed into the AWIPS LDAD

1.9.3 LAN CONNECTIONS

The LAN connection at co-located sites is used during normal operations. Dial-in connections are used for service backup and for normal operations at remote sites.

- When a WFO is experiencing LAN problems
- Sites where the RRS is not co-located with the AWIPS

NOTE: Some sites have never been configured or had their LDAD systems activated, or the LDAD was manually configured without using baseline scripts. [AWIPS RWS-LDAD System Administration Note 15](#) contains steps for bringing these sites up to baseline status.

1.9.4 PUBLIC KEYS INSTALLATION FOR SECURE FTP FROM RWS TO LDAD SERVER

These instructions cover the quick installation for Secure FTP from the RWS to the LDAD server.

NOTE: All user inputs are not case-sensitive on *Windows*; however they are case-sensitive on the LDAD server.

In order to establish a connection to the LDAD and backup servers, obtain the following parameters for the servers if applicable (see Section 1.10.1):

- Phone numbers to the server for the RRS modem port(s)
- User ID for RRS on server
- Password for RRS on server

1.9.5 GENERATE PUBLIC AND PRIVATE KEYS ON THE RWS (USING PUTTY)

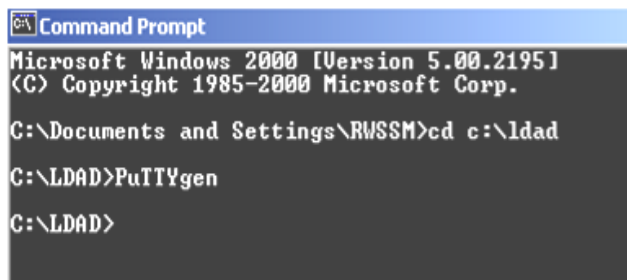
NOTE: This section on generating keys is for information only and is not activated at this time. This procedure is for use by the Regional/NWS Headquarters. This process is not necessary for most/all RRS sites since PuTTY keys have been previously created for all deployed sites.

Continue to use currently installed PuTTY keys.

1.9.5.1 Workstation Procedure

At the Workstation, perform the following procedures:

1. Sequentially click **Start, All Programs** and **Accessories**.
2. Click the **Command Prompt**. The *Prompt* screen will display (Figure 1-94).
3. At the prompt, type **cd C:\LDAD**, then press **Enter**.
4. At the **C:\LDAD** prompt, type **PuTTYgen**, then press **Enter**.



```
Microsoft Windows [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\Documents and Settings\RWSSM>cd c:\ldad
C:\LDAD>PuTTYgen
C:\LDAD>
```

Figure 1-94: LDAD Command Prompt Display

5. A *PuTTY Key Generator* window will appear. In the Parameters box, select **SSH2 DSA** (Figure 1-95).

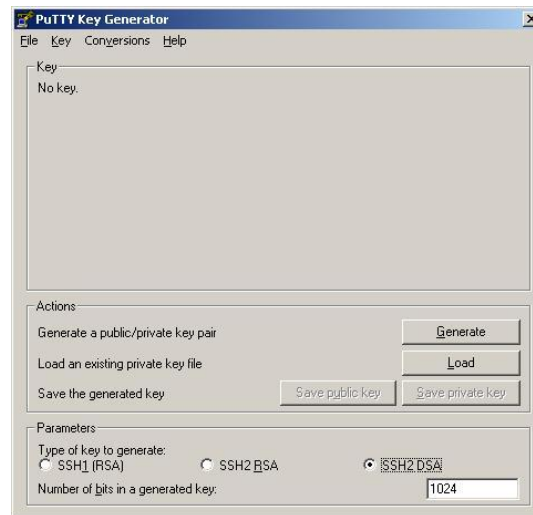


Figure 1-95: PuTTY Key Generator Window

6. Verify that **1024** is displayed for Number of bits in a generated key.

NOTE: When the process of generating the key begins, move the mouse in circles over the blank area in the PuTTY *Key Generator* window. When the key generation completes, a key along with a new set of controls appear in the Key window (Figure 1-96).

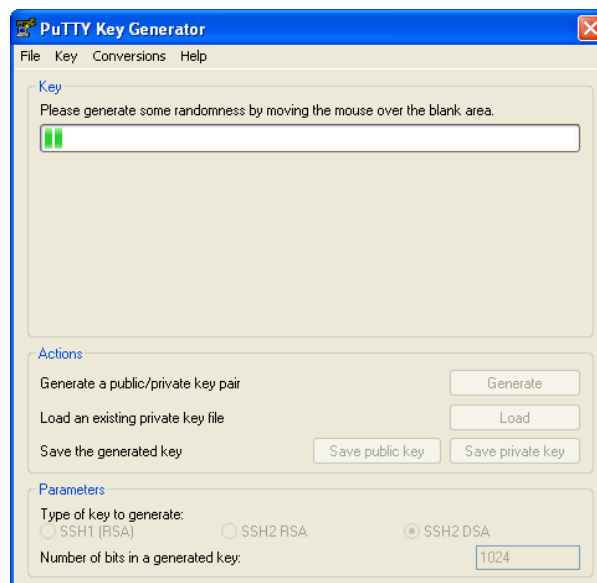


Figure 1-96: PuTTY Key Generator Start Generating Window

7. Click the **Generate** button (Figure 1-97).

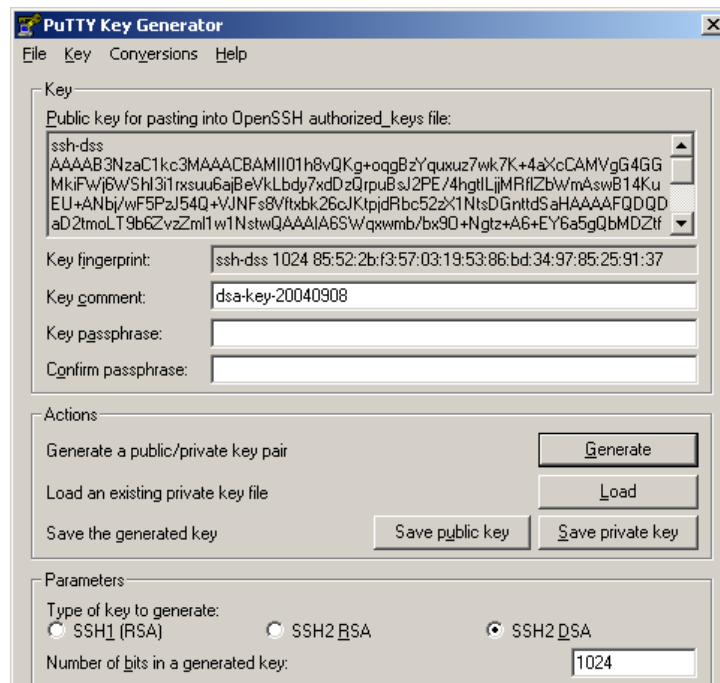


Figure 1-97: New Set of Controls Display (Example)

8. Click the **Key comment** field and type in the unique (four character) AWIPS Station ID (KCCC) at the end of the line. For example, dsa-key-20040812 **KHQA**.

NOTE: Use the site's RRS Station ID, not the LDAD server's AWIPS Station ID, unless they are identical.

1.9.5.2 Private Keys

Save the private key by performing the following steps:

1. Click the **Save private key** button (Figure 1-97).
2. Click **Yes** on the pop-up window.
3. Specify **c:\ldad** (1 is a lower case L) as a directory.
4. Type in **AWIPS-RRS.PPK** as a filename.
5. Click the **Save** button.
6. Optional: If window appears, click **Yes** to overwrite a warning window.

1.9.5.3 Private Keys Backup Copy

Create a backup copy by repeating Steps 1 through 6 in Section 1.9.5.2 and specify **C:** as a directory.

NOTE: If a new private key has been saved to the C:\LDAD directory, Section 1.8.6 must be performed to ensure RRS products can be transmitted to the co-located LDAD server.

1.9.6 MANUALLY SAVE AND COPY PUBLIC KEY TO THE LDAD SERVER

NOTE: This section must be performed if a new private key has been saved to the C:\LDAD directory, or if the authorized_keys2 file for the RRS User Account on the LDAD server is corrupted.

1.9.6.1 Save Public Keys

The Save Public key does not save the key in PuTTY's native format that is expected by the RWS, OMS and LDAD. Therefore, the Public Key must be saved manually as follows:

1. If not already open, start PuTTYgen. Click **LOAD** and browse to the c:\ldad directory to select the file **AWIPS-RRS.PPK**.
2. Select (highlight) the entire text contents of the Public Key box (first box) (Figure 1-98).
3. Press **Ctrl + C** to copy it to the clipboard. The copied text ends with the unique (four character) AWIPS Station ID.

NOTE: Make sure that nothing else is copied to the clipboard at this time until this data is pasted in Section 1.8.6.3, Step 7.

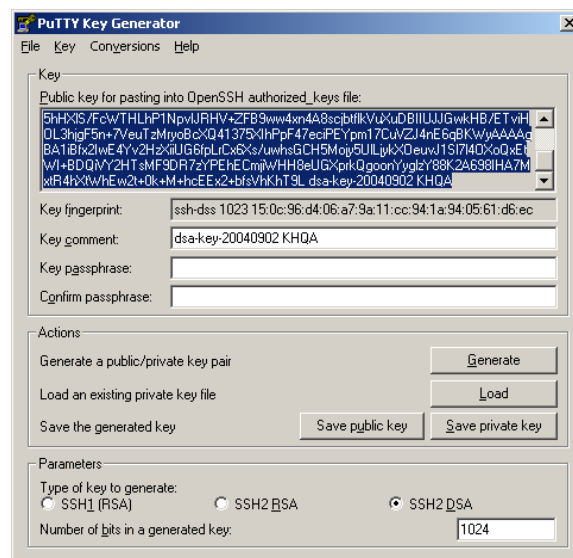


Figure 1-98: PuTTY Key Generator Selected Text Display (Example)

1.9.6.2 Start PuTTY

1. At the C:\LDAD prompt, type **PuTTY** and press **Enter** to start the PuTTY configuration.
2. Type in the LDAD server IP address at the Host Name (or IP address) text box.

3. Verify/enter the authorized RRS Port 22 to connect to LDAD. Select Protocol **SSH** and click **Open** (Figure 1-99).

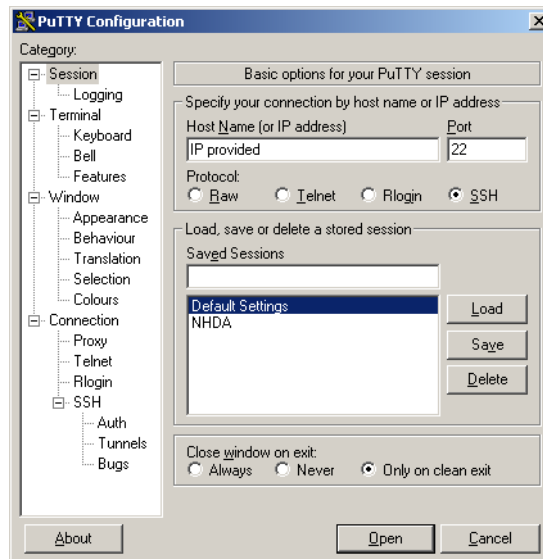


Figure 1-99: PuTTY Configuration Screen

4. If the *PuTTY Security Alert* window (Figure 1-100) displays, click **No** to proceed.

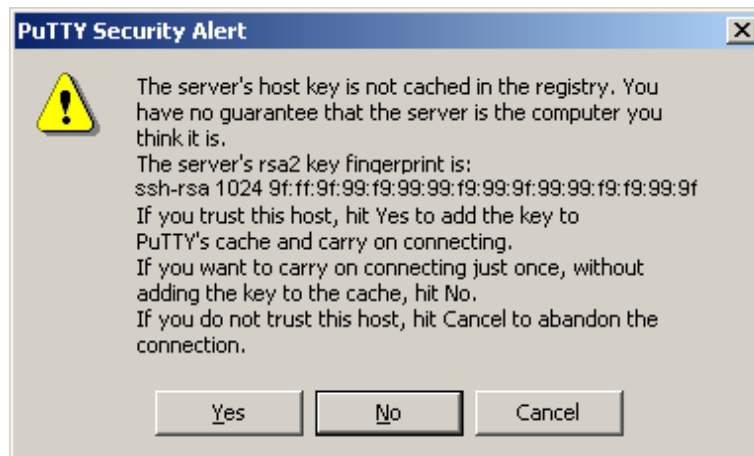


Figure 1-100: PuTTY Security Alert Window

5. Log on as RRS user by specifying RRS username and password. A secure shell window is provided similar to the one shown in Figure 1-101.

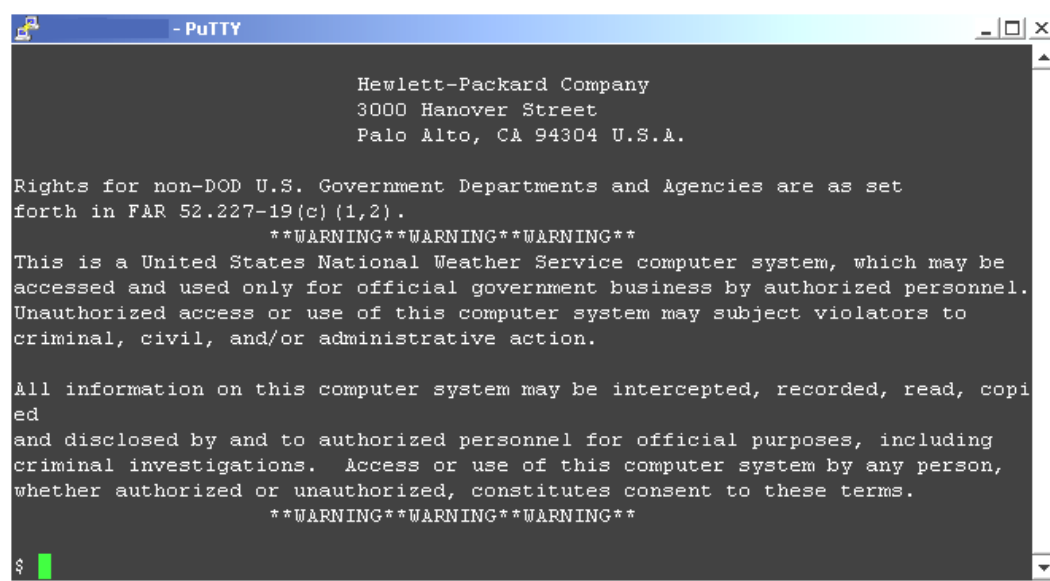


Figure 1-101: PuTTY Secure Shell Window

1.9.6.3 Enter Commands

At the secure shell window, enter the following commands (bold fonts), after the \$ prompt:

1. \$ **ls -la** (to display the contents of the home directory).

NOTE: **l** is a lower case L.

2. Verify that the `.ssh` directory already exists. If the `.ssh` directory does not exist, create it by typing:
 - a. `$ mkdir ~/.ssh`
 - b. `$ Chmod 700 ~/.ssh`
3. `$ cd ~/.ssh`
4. `$ ls -l *.PUB`. However, if `RWS-Kxxx.PUB` exists, then remove or rename the file.
5. `$ vi RWS-Kxxx.PUB` (where xxx = the site's upper air Station ID).
6. Enter **i** to start the vi insertion mode.

NOTE: The **i** is not displayed on the screen.

7. Right-click the **PuTTY Secure Shell** window to paste the clipboard contents copied from Section 1.9.6.1, Step 2.
8. Press the **Esc** key.
9. `$:wq!` to save the file and exit vi.
10. `$ ls -l` to display the contents of the `ssh` folder.

1.9.6.4 Existing Authorization – Keys 2

If the `authorized_keys2` file exists in the `.ssh` folder, type the following commands (bold fonts). Otherwise, continue on to Section 1.9.6.5.

1. `$ cp authorized_keys2 auth_keys_yymmdd` (yymmdd = today's date) to save the file.
2. `$ cat RWS-Kxxx.PUB >> authorized_keys2` to append the new public key (where xxx = your upper air Station ID).
3. Go to Section 1.9.6.6.

1.9.6.5 Authorization Keys 2 – Do Not Exist

If the `authorized_keys2` file does not exist in the `.ssh` folder, type the following commands (bold fonts):

1. `$ cp RWS-Kxxx.PUB authorized_keys2` (where xxx = the upper air station ID).
2. `$ chmod 640 authorized_keys2`.

1.9.6.6 Update LS3 Server

The previous section updated the `authorized_keys2` file for the LS2 server. Perform the same two steps for the LS3 server.

1. At the prompt, `ssh ls3` (lower case L) and log on with the RRS credentials.
2. Repeat Sections 1.8.6.3 and 1.8.6.4 (or 1.8.6.5).

1.9.6.7 Exit

After the `$ prompt` type **exit** to exit to LS2 and type **exit** again to close the PuTTY windows. The site is now set up to transmit products to LDAD via a LAN or a phone line from the Workstation to a co-located LDAD.

1.9.6.8 Headquarters Coordination

If necessary coordinate with WSH and/or Regional Headquarters to update the private key database and backup regional LDAD Servers.

1.9.7 ESTABLISHING A DIAL-UP CONNECTION TO A REMOTE LDAD SERVER

Perform this section for a dial-up connection to backup LDAD. This section is not required for a dial-up connection to co-located LDAD if Section 1.9.5 and 1.9.6 have been executed. Establish a dial-up connection to the remote LDAD server by performing the following steps:

NOTE: If needed, call the Direct Field Support staff (Helpline) at the Sterling Field Support Center (SFSC) at (703) 661-1268.

1. On the desktop, right-click the **Local Area Connection** icon located in the *Notification* area task bar (lower, left corner of the screen).
2. Select the **Disable Option**. Proceed to establishing a dial-up connection for each of the backup servers.
3. On the desktop, sequentially click **Start**, **Control Panel** and **Network Connections** to open the window depicted in Figure 1-102.

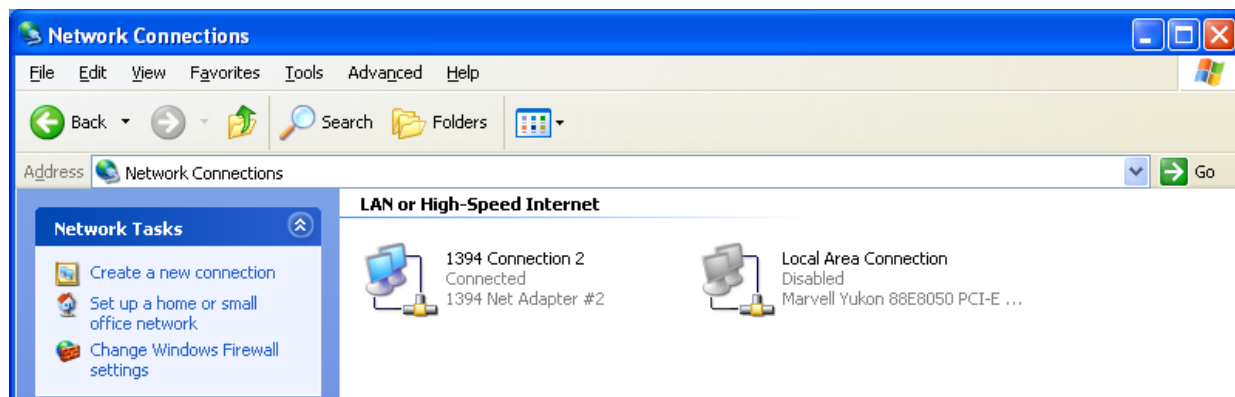


Figure 1-102: Network Connections Window

4. Click the **Create a new connection** link to start the *New Connection Wizard* window

5. Click **Next** to choose the connection type. Select the **Connect to the network at my workplace** option as depicted in Figure 1-103. Click **Next**.

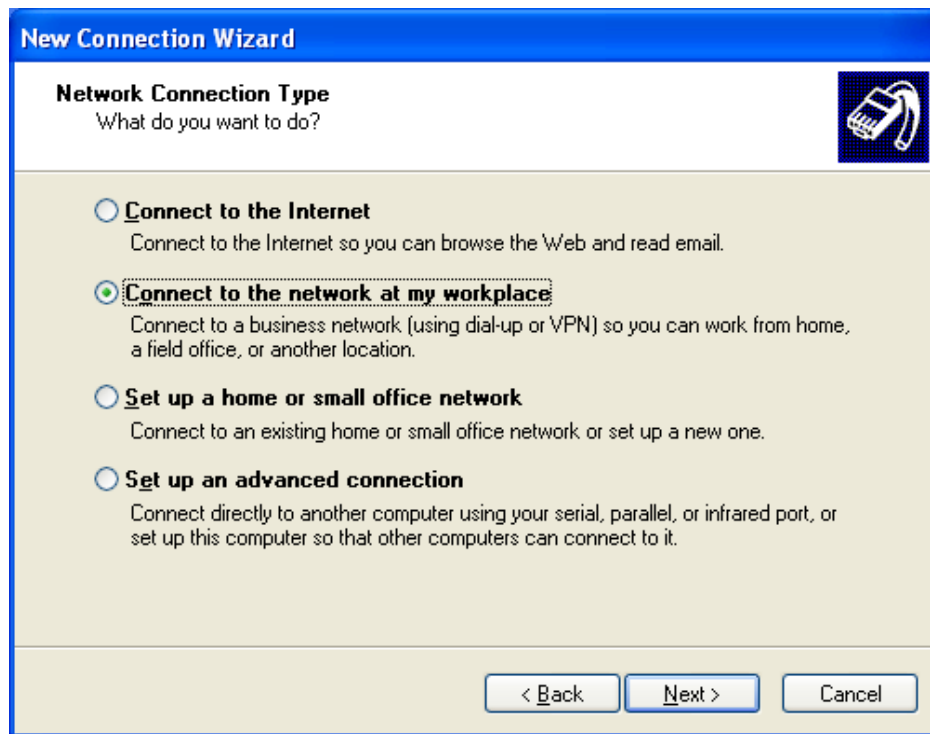


Figure 1-103: Network Connection Wizard Window

6. Select **Dial-up connection** (Figure 1-104). Click **Next**.

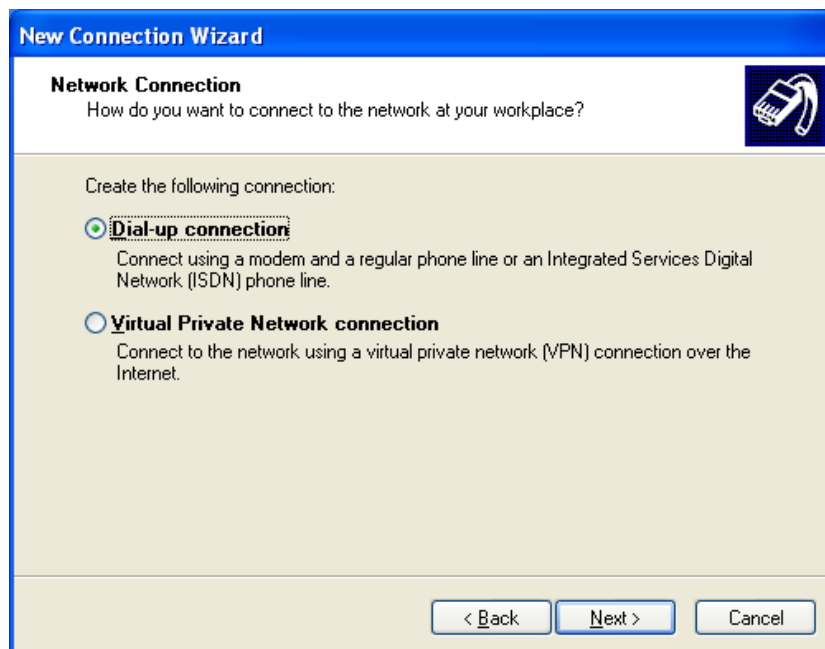
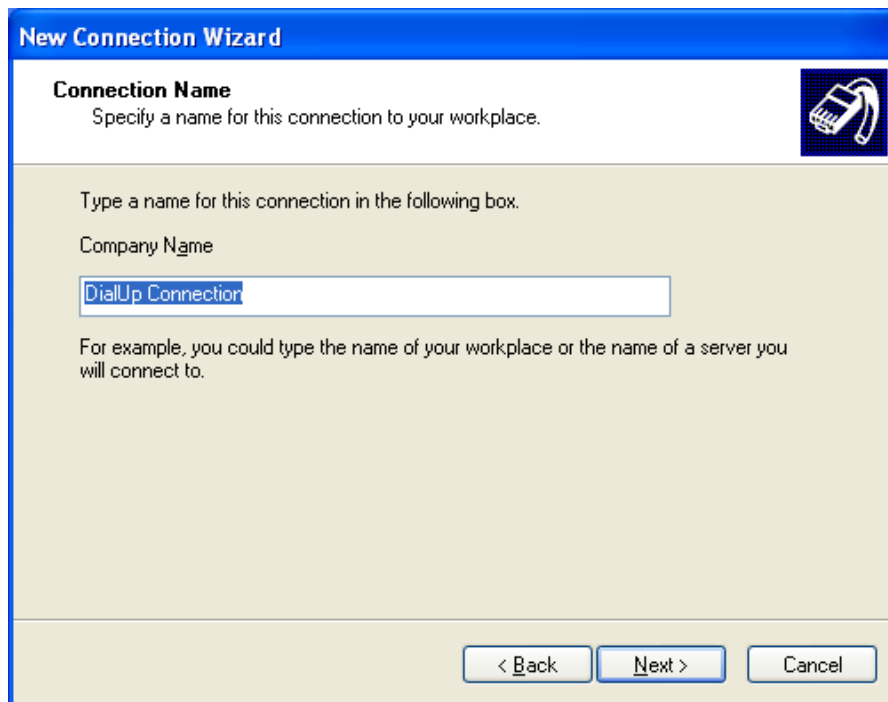


Figure 1-104: Dial-up Connection Window

7. Type the name of the connection (Figure 1-105). Assign a descriptive name for the LDAD server as appropriate. Click **Next**.



The screenshot shows the 'New Connection Wizard' window with the 'Connection Name' step. The title bar is blue with the text 'New Connection Wizard'. Below the title bar is a white header area with the text 'Connection Name' and 'Specify a name for this connection to your workplace.' To the right of the header is a small icon of a telephone handset. The main area has a light beige background. It contains the text 'Type a name for this connection in the following box.' followed by 'Company Name' and a text input field containing 'DialUp Connection'. Below the input field is a note: 'For example, you could type the name of your workplace or the name of a server you will connect to.' At the bottom are three buttons: '< Back', 'Next >', and 'Cancel'.

Figure 1-105: Completing the Network Connection Wizard

8. Type the phone number to connect to the server. Verify that all necessary codes to access outside lines for local and long distance calls are displayed (Figure 1-106). Click **Next**.



The screenshot shows the 'New Connection Wizard' window with the 'Phone Number to Dial' step. The title bar is blue with the text 'New Connection Wizard'. Below the title bar is a white header area with the text 'Phone Number to Dial' and 'What is the phone number you will use to make this connection?' To the right of the header is a small icon of a telephone handset. The main area has a light beige background. It contains the text 'Type the phone number below.' followed by 'Phone number:' and a text input field containing '9301 999-9999'. Below the input field is a note: 'You might need to include a "1" or the area code, or both. If you are not sure you need the extra numbers, dial the phone number on your telephone. If you hear a modem sound, the number dialed is correct.' At the bottom are three buttons: '< Back', 'Next >', and 'Cancel'.

Figure 1-106: Phone Numbers to Dial Window (Example)

9. On the *Connection Availability* screen, select **Anyone's Use**. Click **Next**. Ensure *Share with all users of this computer* is displayed. Click **Finish** in Figure 1-107.

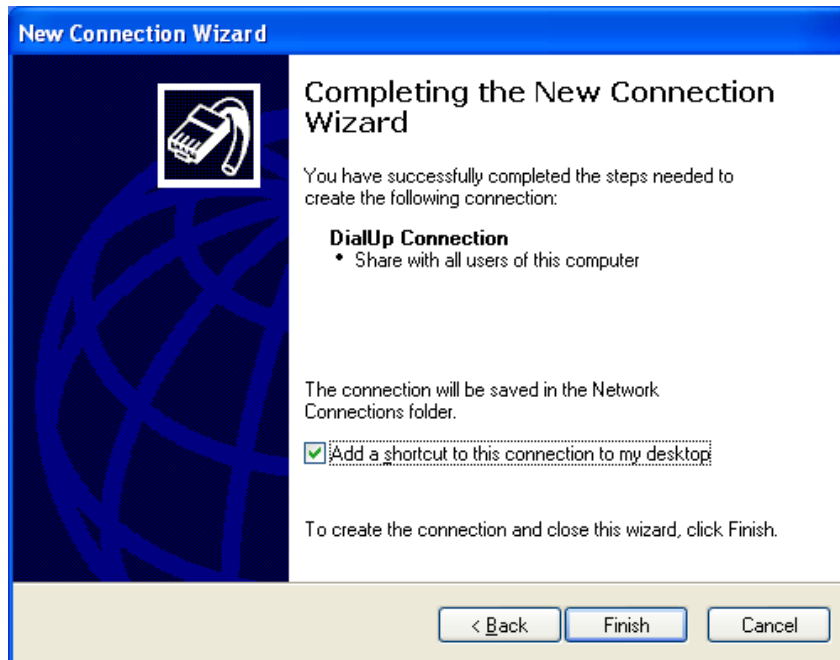


Figure 1-107: Connection Complete

10. When the *Connect DialUp Connection* window opens, enter the LDAD **User name** and **Password** provided. Verify that the correct phone number and dialing rules are displayed. Click **Dial** and wait for the connection to complete. The *Connect* window is shown in Figure 1-108.

NOTE: The option to **Save user name and password** has been disabled for security reasons.

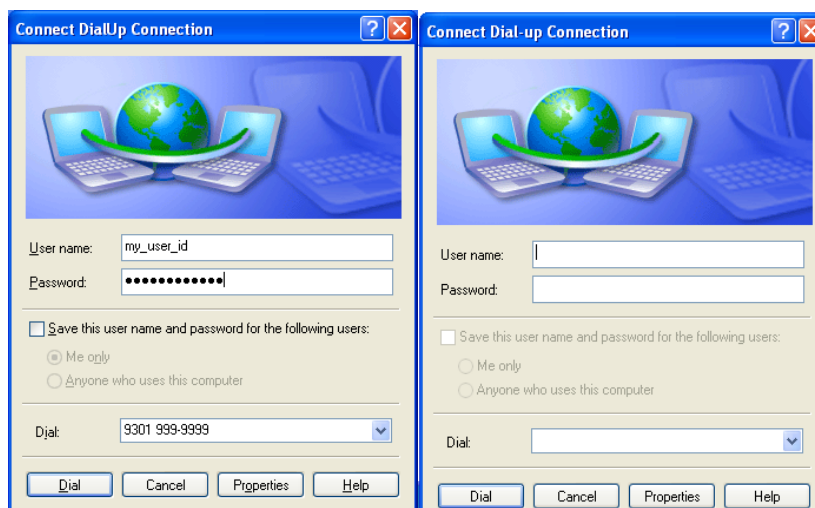


Figure 1-108: Connect DialUp Windows

11. Verify that the *Connection Complete* window (Figure 1-109) displays to confirm the connection with the particular local LDAD server name and click **OK**. After the connection has been established a secure application, PuTTY for example, can be run to communicate with the server.

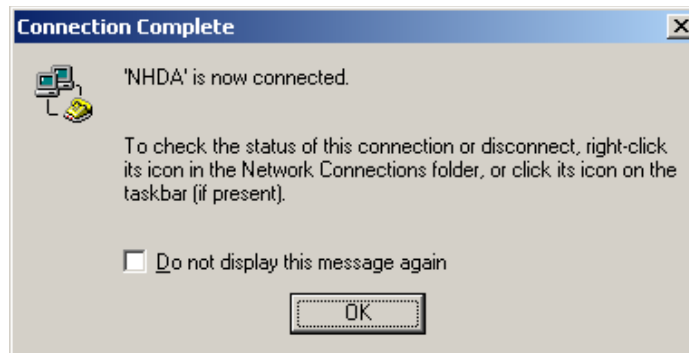


Figure 1-109: Connection Complete

12. Repeat all steps in Section 1.9.6 using the appropriate parameters for the server.
13. On the desktop, right-click the **Dial-up Connection icon** located in the Notification area task bar (lower, right corner of the screen).
14. Select the **Disconnect** option.
15. Repeat Step 3 through Step 14 for each of the backup servers.
16. Verify that the LAN icon displays in the Notification area task bar:
 - a. Sequentially click **Start** and **Control Panel**.
 - b. Select **Network Connections**.
 - c. Right-click on **Local Area Connections**.
 - d. Left-click on **Enable**.
17. Close the PuTTYgen application.
18. Close the *Command Prompt* window by typing **exit**.

1.10 CHANGING AN RRS USER PASSWORD ON THE LDAD SERVER

The site AWIPS Systems Administrator is the only one who can change the password on the local LDAD server. The Systems Administrator can use UNIX commands or sam commands to change RRS User passwords. See [AWIPS RWS-LDAD System Administration Note 15](#) (*RWS-LDAD Interface Activation Instructions*), Section 3 for changing LDAD passwords.

1.10.1 LDAD INFORMATION – RWS COMMUNICATION/PASSWORD OPTIONS

This information is required to set up communications passwords on the RWS to ensure coded messages are transmitted. The communication parameters allow the site to send the messages via the LAN or phone lines. See [AWIPS RWS-LDAD System Administration Note 15](#) for additional information.

NOTE: The RWS software must be in the Offline Mode. Go directly to **Enter Offline Mode**. View Station Data.

1. Click the **LDAD Info** button at the bottom of the Station Data screen to see the communication options available. This window has the LAN and multiple phone line options available (Figure 1-104).

The LDAD Data Display window contains a table with the following data:

Type	Phone Number	Server IP	User Name	
LAN		10.201.99.14	rrstransmit	<input type="button" value="Edit"/>
Phone 1	234234234234	1.1.1.1	rrstransmit	<input type="button" value="Edit"/>
Phone 2	235235235235	1.1.1.1	rrstransmit	<input type="button" value="Edit"/>
Phone 3	NA			<input type="button" value="Edit"/>

At the bottom of the window are two buttons: and .

Figure 1-110: LAN and Phone Line Options (Example)

2. Select the type of communication line to edit. Select the **Edit** button. The following windows appear if the LAN or a Phone line option is selected. The RWS Site Administrator must set this information. The RRS User Name and Password must match the RRS User Name and Password on the applicable LDAD for the LAN communications to local LDAD (Figure 1-111). A password for the LAN is not required.

The LDAD Data for LAN window contains the following fields and buttons:

- Type: LAN
- Phone Number:
- Server IP:
- User Name:
- Password:
- Verify Password:
- Buttons: , ,

Figure 1-111: LAN Entries (Example)

3. The primary, secondary, and tertiary modem/phone (Phone 1) communicates with the regional LDAD (Figure 1-112).

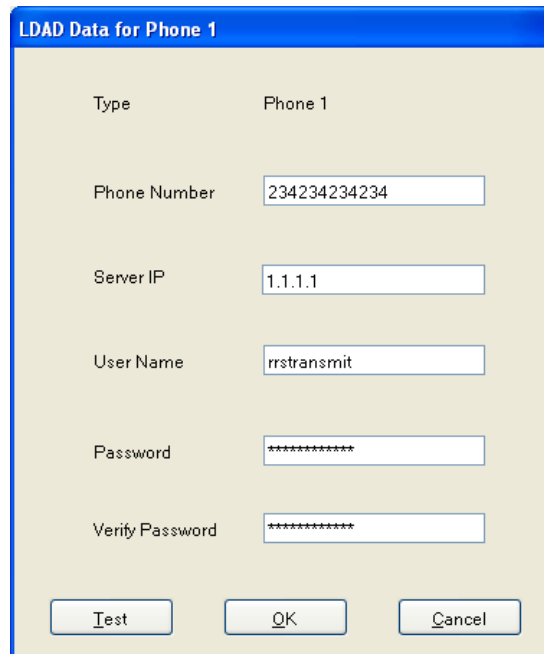


Figure 1-112: Phone Entries (Example)

1.10.2 RWS SOFTWARE SYSTEM ADMINISTRATION PASSWORD GUIDELINES

Passwords must be created consistent with the following criteria:

- Passwords must have at least 12 non-blank characters.
- At least one of the characters must be from the alphabet (upper or lower case).
- At least one of the characters must be a number (0-9) or a special character (e.g., ~, !, \$, %, ^, and *).
- Six of the characters may only occur once in the password (e.g., 'AAAAAAA' is not acceptable, but 'A%rmP2g3' and 'A%ArmA2g3' are acceptable).
- Passwords must not include any of the following: vendor/manufacture default passwords: names (e.g., system user names, family names), words found in dictionaries (i.e., words from any dictionary, spelled forward or backward), addresses or birthdays, or common character sequences (e.g., 3456, ghijk, 2468).
- Vendor-supplied default passwords, such as System, Password, Default, USER, Demo, and TEST, must be replaced immediately upon implementation of a new system.
- Systems or applications that have multiple passwords for different levels of access or authentication must have unique passwords for each level.
- Passwords must be protected to prevent unauthorized use. Specifically:
 - Passwords must not be shared except in emergency circumstances or when there is an overriding operational necessity as documented in an operating unit System Security Plan. Once shared, passwords must be changed as soon as possible.

- Group passwords (i.e., a single password used by a group of users) must not be used without some other mechanism that can assure accountability (such as separate and unique network User ID's).
- Group passwords must not be shared outside the group of authorized users and must be changed when any individual in the group is no longer authorized. Group passwords must never be re-used.
- Passwords that need to be shared because of an overriding operational necessity, as well as group passwords, cannot be used to control access to other IT systems or applications on IT systems.
- Passwords in readable form (e.g., written on paper) must be kept in a safe location and not stored in a location accessible to others. For example, safe locations include storage in a locked container accessible only by the user.
- IT systems and the Workstation must not display or print passwords as they are entered.
- User applications must not be enabled to retain passwords for subsequent re-use, or be configured to bypass authentication mechanisms. For example, Internet browsers must not be enabled to save passwords for re-use.
- Passwords must not be distributed through non-encrypted electronic mail, voice-mail, or left on answering machines.
- Passwords must be changed as follows:
 - At least every 60 days
 - Immediately if discovered to be compromised or one suspects a password has been compromised
 - Immediately if discovered to be in non-compliance with this policy
 - On direction from management
- Do not reuse a password you have used the last 24 times you have changed your password, or more recently than 2 years from when you last used the password.
- Access to password files or password databases must be restricted to only those who are authorized to manage the IT system.
- If a determination is made that a password has been compromised or is not in compliance with this policy, and if the password is not immediately changed, the account must be temporarily suspended until the password is changed.
- Passwords for servers, mainframes, telecommunications devices (such as routers and switches), and devices used for IT security functions (such as firewalls, intrusion detection, and audit logging) must be encrypted when stored electronically.
- Passwords, other than single-use (one-time) passwords, must be encrypted when transmitted across a wide area network or the Internet.

1.11 MANUAL UPDATES

1.11.1 OPTIONAL MICROSOFT WINDOWS SECURITY UPDATE

Routinely (monthly) check to see if the Workstation has automatically received the latest security updates from *Microsoft*. If not current, perform a manual update procedure.

1. Click the *Windows* **Start** button. Select **All Programs** and **Windows Update**.
2. In *Internet Explorer*, click **Express** for high priority updates. The computer will check for available security updates that have not been made to the computer. An update screen will indicate if updates are needed. If none are needed, proceed to Step 12.
3. To install updates, click **Download** and **Install Now**. Once the updates are complete, click **Close**. (This will install the *Windows Genuine Advantage Validation Tool*, if necessary.)
4. Click **Continue** on the *Review your installation results* window.
5. When a list of high priority updates displays, click **Install Updates**.
6. In the EULA agreement window, click **I Accept**. The updates will install.
7. When the updates are complete, click **Install** for the *Internet Explorer* upgrade.
8. Click **I Accept** in the agreement window.
9. When prompted to authenticate *Windows*, click **Validate**.
10. Click **Next** in the following window.
11. After the installation is complete, click **Restart Now** to restart the RWS if needed. If restarting is not required, close the update screen.
12. Close all open windows.

1.11.2 MANUAL UPDATE - OPTIONAL MCAFEE VIRUS SECURITY UPDATE

Routinely (monthly) check to see if the RWS has automatically received the latest security updates from McAfee. If not current, perform the following manual update procedure:

1. Right-click the **McAfee shield** at the bottom of the screen.
2. Select **Update Now** (update in progress). If an error appears, click **Update Now** a second or third time until it disappears.
3. Click the **Close** button when complete.
4. Reboot the computer if prompted to do so.

1.12 BIOS UPDATE SOFTWARE DOWNLOAD/UNZIP PROCEDURE FROM WEBSITE

NOTE: The National Reconditioning Center (NRC) performs this procedure on RRS computers prior to initial or replacement issue. This procedure is provided to field sites for information only to verify settings on a failed RRS computer before returning it to NRC for replacement, if necessary. This procedure can also be used by the field to return the settings to the authorized configuration if the current configuration is in doubt. This procedure will also be used, along with additional instructions if it becomes necessary for field sites to update their BIOS version level.

The RWS computer BIOS update software and most other RRS software/firmware is available on the OPS1 Web site as a zipped file that needs to be downloaded to your computer and unzipped. This site also includes software installation notes in PDF format ready for download. The following procedures are to be used to perform the software download function:

1. Under RRS Workstation Software Versions, left-click on **selected .zip file**, and select **Save**.
2. The *Save As* screen will appear and indicate the file will be saved to the Desktop. Click **Save**. A display screen will appear to indicate the download is complete.
3. After saving, unzip and store it on the Desktop under RWS BIOS.
4. Close the *OPS1* screen.

1.12.1 RWS BIOS UPDATE SOFTWARE UPLOAD PROCEDURES

NOTE: See RRS software notes for the most recent BIOS update procedures. Once downloaded and unzipped, the BIOS can be uploaded into the appropriate RWS Gateway E6300 computer.

1. Log on to the RWS (*Windows*) operating system as a user with Administrative privileges.
2. Close all running applications such as the RWS software.
3. Select the **RWS BIOS** icon on the Desktop. Double-click on the file labeled **.exe**.
4. The Intel Express BIOS Update will start. In the *Welcome to InstallShield Wizard for Intel[R] Express BIOS Update* dialog box, click **Next >**.

NOTE: If the update started and the following error displays: *Error installing iKernal.exe: (0xa00)*, log on the RWS (*Windows*) operating system as a user with Administrative privileges failed. Repeat Step 1.

5. The *License Agreement* dialog box will appear. Click **Yes**. The *Install Wizard Complete* dialog box will appear.

NOTE: If a message box displays the following:
The BIOS version that you are installing is (either the same as or older) than your system's current BIOS. Do you want to continue?, click **No**. Do not continue to run this procedure. Exit by clicking **OK** in the next message box.

6. Read the WARNING in this box and click **Finish**. Do not touch the keyboard and mouse until the *Windows* logon screen appears as described in Step 7.

NOTE: During the two reboots described in Step 7, the E6300 computer will pause for several minutes on the system boot-up screen (the screen with the large green colored *Gateway* text across it).

7. The E6300 computer will shut down *Windows* (without operator intervention) and reboot to a black screen with yellow text: *Flashing motherboard firmware*. The update process will run to completion and the E6300 computer will reboot again (without operator intervention) to the *Windows* logon screen. Logon as the same user as in Step 1. A dialog box stating: *The Express BIOS update has completed successfully* will appear.
8. Click **OK**. Delete the icon and the .exe file from the Desktop.

9. Shut down *Windows*. Perform all steps of the following BIOS Setting Procedure.

NOTE: The BIOS update **IS NOT** complete until the BIOS Setting Procedure described in Section 1.12.2 is performed. This is necessary to ensure that options added or modified by the update are adjusted to their new Setup Defaults. Perform the BIOS Setting Procedure even though it appears the BIOS is setting Setup Defaults and back to the way it was set for RWS.

1.12.2 BIOS SETTING PROCEDURE - RWS GATEWAY E6300 COMPUTER

This procedure sets the RRS computer's BIOS as required by the RWS software program software for the *Gateway* E6300 computers.

The method used to set the RRS computer's BIOS (also referred to as the CMOS memory settings) is to set the BIOS to its built-in Setup Defaults, and then change only those few settings that differ from those defaults. There is no reason to check each setting. Use the following procedure to ensure that the BIOS is set as required by the RWS program software:

1. To access *System Setup*, power up the RRS computer and immediately begin repeatedly pressing the **F2** function key until the *System Setup* screen appears.

NOTE: Do not wait for the processor boot screen (the screen with the large green *Gateway* logo) to press **F2**. If the system begins booting the hard drive, **F2** was not pressed quickly enough. Reboot the computer and try again. At times, the processor boot screen may disappear and reappear again. If this happens, continue repeatedly pressing the **F2** function key. The *System Setup Main* screen will appear with *Main* highlighted on the top blue colored selection bar.

2. Without changing any screens or highlighting, load the Setup Defaults by pressing the **F9** function key. A Load Defaults? (Y/N) question box will appear. Answer Yes by pressing the **Y** key.
3. On the same *System Setup Main* screen, use the Up/Down arrow keys to highlight the <Enable> selection of Hyper Threading Technology, if it is not already highlighted. Press **Enter**. A *Disable/Enable* selection box will appear. Use the up/down arrow keys to highlight Disable, then press **Enter**. Hyper Threading Technology should now show <Disable>.
4. On the same *System Setup Main* screen, use the Up/Down arrow keys to highlight the [MM/DD/YYYY] selection of System Date. Using the Tab key to move between MM/DD/YYYY, enter the current UTC date.

NOTE: If you are unsure of the UTC time and date, use another computer to access <http://www.time.gov> and select UTC at the bottom of the Web page's screen.

5. On the same *System Setup Main* screen, use the Up/Down arrow keys to highlight the [HH:MM:SS] selection of System Time. Using the Tab key to move between HH:MM:SS, enter the current UTC time in 24-hour format. Ensure to set the current UTC time and date, and NOT local time and date.
6. On the same *System Setup Main* screen, verify the three settings that were changed now show as follows:
 - Hyper Threading Technology <Disable>
 - System Date [MM/DD/YYYY] Current UTC date

- System Time [HH:MM:SS] Current UTC time, 24-hour format
7. Select the *Boot* screen by using the Left/Right Arrow keys to highlight Boot on the top blue colored selection bar. Using the Up/Down Arrow keys, highlight the <Enable> selection of Boot to Network, then press the Enter key. A Disable/Enable selection box will appear. Use the Up/Down Arrow keys to highlight Disable, then press the **Enter** key. Boot to Network should now show <Disable>.
 8. On the same Boot screen, use the Up/Down Arrow keys to highlight the <Enable> selection of USB Boot, then press the **Enter** key. A Disable/Enable selection box will appear. Use the Up/Down Arrow keys to highlight Disable, then press the **Enter** key. USB Boot should now show <Disable>.
 9. On the same *Boot* screen, verify the two settings that you have changed are now show as follows:
 - Boot to Network <Disable>
 - USB Boot <Disable>
 10. Without changing any screens or highlighting, Save and Exit by pressing the **F10** function key. An Exit Saving Changes? (Y/N) question box will appear. Answer Yes by pressing the Y key. The computer will reboot. You are finished, except to verify that new settings have been saved.
 11. To verify the new settings, double check your changes. Repeat Step 1. Using the Arrow keys, navigate as described in the previous steps to check that the locations you changed are still set as listed in Steps 6 and 9.
 12. Once the settings have been re-verified, exit this time by pressing the **Esc** key. An Exit Setup? (Y/N) question box will appear. Answer Yes by pressing the **Y** key.

You are finished with BIOS. The computer will reboot to the RWS software program. No changes are necessary to the RWS program due to performing this BIOS procedure.

1.13 RRS WORKSTATION STARTUP

1. Turn on the RRS Workstation and log in using assigned Username and Password.
2. Double-click the **RWS.NET** Desktop icon, Figure 1-113.



Figure 1-113: RWS.NET Desktop Icon

3. The *RWS* window (Figure 1-114) will appear with the **NOAA Warning** message. Read the message and click the **OK** button.

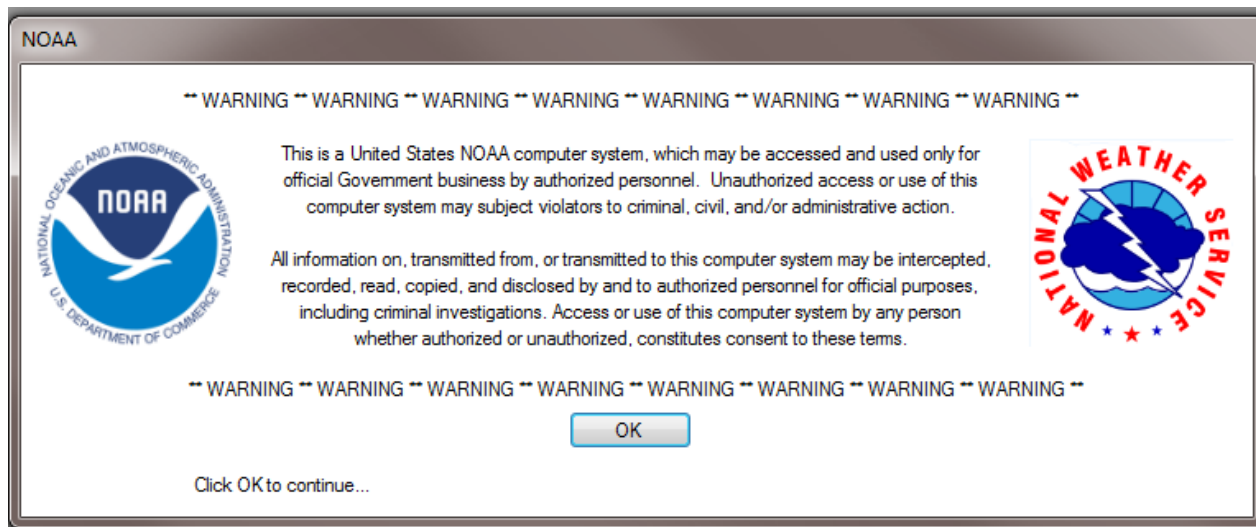


Figure 1-114: NOAA Warning Window

4. The *RWS Main Menu* window (Figure 1-115) will appear. Select **Run a live flight**.

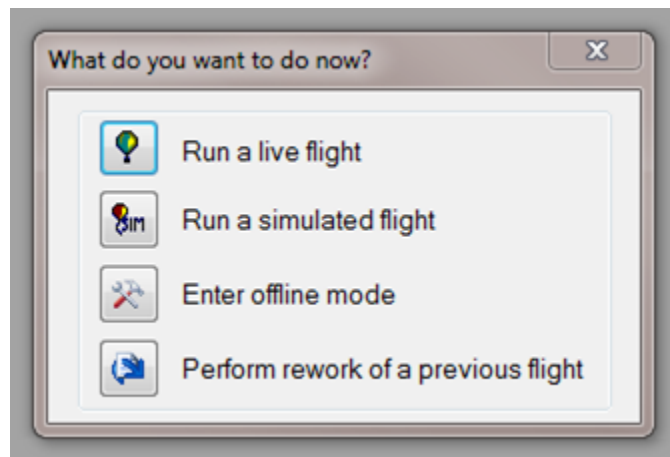


Figure 1-115: RWS Main Menu

5. Click **Yes** in the prompt to power on the UPS.
6. The **RWS** Preflight and **Hardware Status** screen will appear (Figure 1-116).

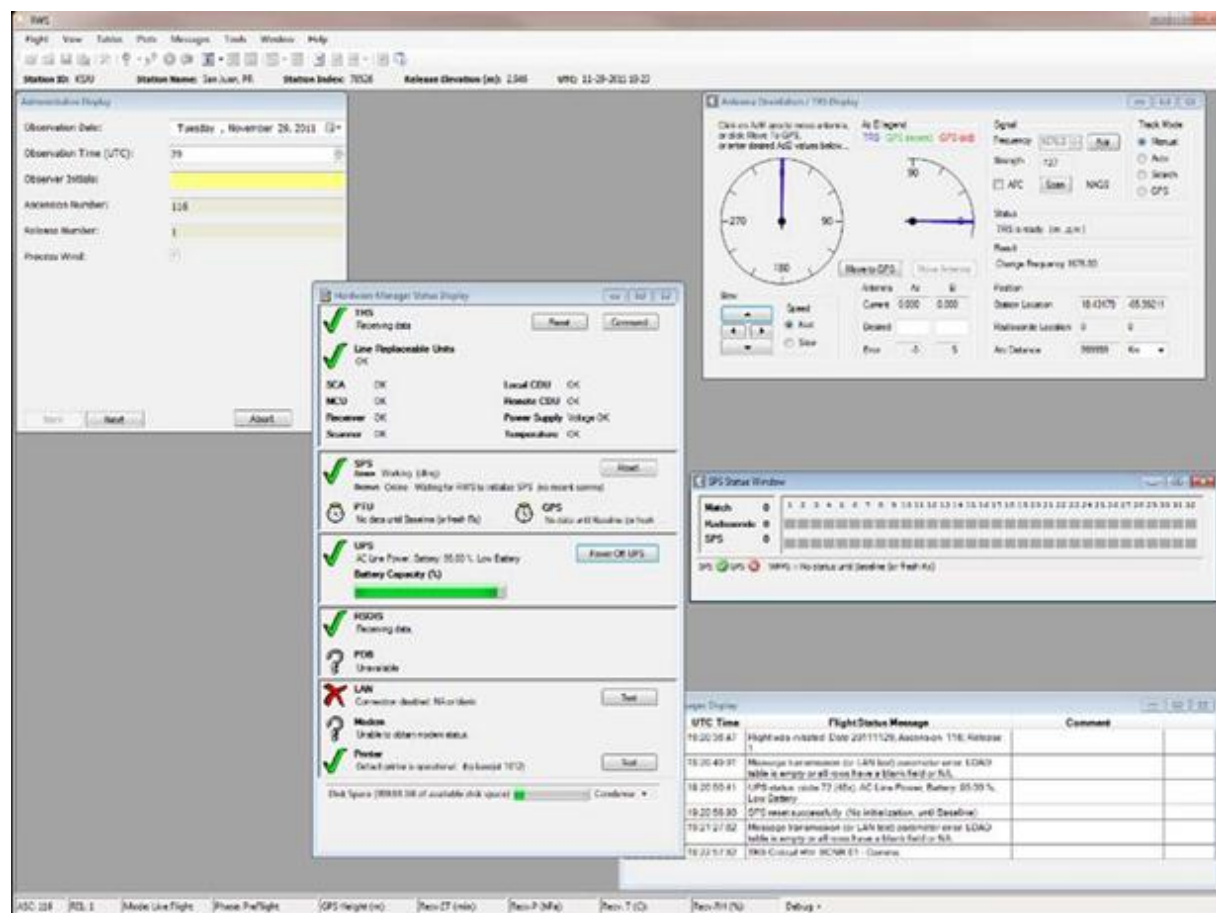


Figure 1-116: RWS Preflight and Hardware Screen

1.14 RWS WORKSTATION SHUT-DOWN

1. Click **Start**, and then click **Shut Down**. The *Shut Down Windows* dialog box will open.
2. Click the arrow button to open the **What do you want your computer to do** list, then click **Shut down**.
3. Click OK. Windows shuts down and turns off the computer.

NOTE: If for some reason the *Turn Off Computer* option in Windows does not turn off the computer, press the power button on the front of the case. If this does not work, press and hold the power button for about five seconds, then release it.

CHAPTER 2 - TRS SYSTEM ADMINISTRATION

The TRS is a system to receive and track radiosondes. The TRS uses RDF radiotheodolite technology for tracking and GPS technology for wind finding. By combining the two methodologies, TRS achieves the highest possible range of signal reception and accuracy of wind finding. The TRS output signal is processed by a Signal Processing System (SPS) that is compatible with the model of the radiosonde being used. The PTU, and the radiosondes GPS coordinates are passed on to the Signal Processing System (SPS) where differential correction is applied. This information is then sent by the TRS DCE to the RRS Workstation where wind speed and direction are calculated to generate standard meteorological messages. A two-meter parabolic dish is mounted on a movable frame that allows for independent Azimuth and Elevation movements. A scanning antenna mounted at the focus of the parabolic dish receives and samples the incoming RF signal by electronically switching between four helical elements to provide signals to command the Azimuth and Elevation servomotors to move the antenna.

2.1 TRS FIRMWARE

The Telemetry Receiver System (TRS) Firmware is updated and compiled into a HEX file by the vendor. Each site is responsible for determining the current version and, if necessary, uploading the latest firmware versions onto the respective TRS subsystem via a serial interface using the Offline Maintenance Suite (OMS).

2.1.1 TRS FIRMWARE HARDWARE REQUIREMENTS

Firmware versions for each of the following TRS subsystems are required to be implemented:

- Control Display Unit (CDU) firmware. This firmware is the same for the Local CDU (LCDU) in the TRS radome, and the Remote CDU (RCDU) at the launch area. The selection of the CDU on the TRS Advanced Operations screen directs the upload to the failed CDU. When uploading a new version, the firmware must be sent to both the LCDU and RCDU in separate commands.
- Motion Control Unit (MCU).
- Receiver (Rcvr).
- System Communication Assembly (SCA).
- Scanning Antenna Assembly (SAA). This firmware is **not** provided. This firmware is currently hard coded on the SAA board and any subsequent change will be installed by the National Reconditioning Center (NRC) or vendor.

2.1.2 OBTAIN EXISTING FIRMWARE VERSION DATA

Before starting the upload procedures for a new firmware version, it is useful to obtain the existing version number and software load information currently on the TRS hardware.

1. The TRS must be ON and the *TRS Advanced Operations* screen within OMS OBIT must be opened to request a firmware version.
2. The required command details for requesting the firmware version information for a subsystem (x) are listed in Table 2-1. Enter the following command to check (C) the firmware (F) version (V):

Command: `/CxF?cc<CR>`

3. A reply to the command should be returned within 1 second or a timeout will occur.

Example Reply: `CxF=Vd.ddxcc<CR>`

Table 2-1: Firmware (F) Version (V) Command

FIELD	DEFINITION
x	Subsystem identifier:
c	System Communications Assembly (SCA) Microcontroller
m	Motion Control Unit (MCU) Microcontroller
1	Local Control Display Unit (LCDU) Microcontroller
2	Remote Control & Display Unit (RCDU) Microcontroller
r	Receiver (Rcvr)
s	Scanner (SAA)
cc	The ASCII representation of the hexadecimal value of a single-byte XOR-checksum of all the preceding characters

4. The Example Reply, `CxF=Vd.ddxcc<CR>` returns a single line of firmware (F) version (V) data as shown in Table 2-2.

Table 2-2: Firmware (F) Version (V) Reply

FIELD	DEFINITION
Cx	Subsystem identifier (see Table 2-1 for details of the value of x)
F=Vd.ddx	The firmware version information, d.dd is the numeric version, and x is the optional letter indicating a sub-version (or a space).
cc	The ASCII representation of the hexadecimal value of a single-byte XOR-checksum of all the preceding characters.

5. Special procedures are required to request SCA firmware. To request a firmware version for the SCA, perform the following steps:
 - a. Type `/CCF?` in the TRS Advanced Operations screen, **Text commands** box.
 - b. Click **Send**. Response is shown in Figure 2-1.

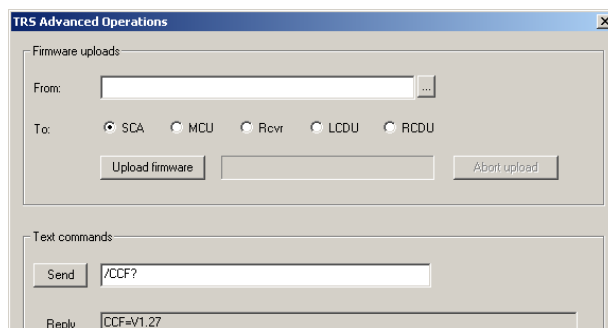


Figure 2-1: SCA Firmware Version Reply

2.1.3 SOFT RESET SYSTEM OR SUBSYSTEM

Command: `/Ixcc<CR>`

1. Requests the initialization (*I*) (soft reset) of the indicated subsystem (*x*) (required for new LRUs or entire system). The command details are listed in Table 2-3.

Table 2-3: Soft Reset Command

FIELD	DEFINITION
<i>x</i>	Subsystem identifier, as indicated in Table 2-1.
<i>cc</i>	The ASCII representation of the hexadecimal value of a single-byte XOR-checksum of all the preceding characters

2. A timeout on the reply to this command will occur in 1 second.

Reply: `OKcc<CR>`

3. The above reply is returned if the command was successfully received and execution has begun. Reset the SCA using the following command line:

Type `/IC <Enter>` to initialize (*I*) a subsystem in the TRS Advanced Operations screen (Text commands Send Box).

4. During the initialization phase, each TRS subsystem is marked with a communications error status bit. Once the subsystem has completed initialization, this bit is cleared, indicating that the subsystem has come back on-line. Notice that a soft reset will not restore full functionality to the MCU. Further initialization instructions from the SCA, i.e., motor warm-up and axis index location must occur before the MCU becomes fully functional for use.
5. The final MCU initialization stages can be tracked through the `/DT` response, Tx field. As program progress continues from *x* = w, warm-up, if needed, to *x* = l, axis initialization to *x* = m, antenna manual control. Similarly bit 3 should eventually clear and can be verified by reading the *Shh* field.
6. The time required to accomplish the soft resets are a variable. Other than the motor warm-up time, the maximum time required for a complete soft reset of the entire system is less than 3 minutes. At the extreme cold temperature limit, the heating of the motors will require less than 20 minutes from application of power. The `/DT` response should be polled to determine system progression and availability. The functional operations resulting from a soft reset are shown in Table 2-4, Soft Reset Operations

Table 2-4 Soft Reset Operations

SUB SYSTEM	NAME	DESCRIPTION
c	System Communications Assembly (SCA)	Restarts the SCA. Performs local POST. The TRS clock is reset to zero. The flight clock is reset to zero, and stopped. Gathers LRU status information. Requests MCU to perform warm-up and axis initializations. Analyses results and indicates availability of LRUs.
m	Motion Control Unit (MCU).	Restarts the MCU, aborting any current operations. Performs local POST. Restores volatile variables (positioning velocities and accelerations) to their system defaults (see appropriate entries below). No antenna movement is carried out (warm-up and axis initialization are not executed) and the station reverts to the manual antenna control mode.
1	Local Control Display Unit (LCDU)	Restarts the CDU. Performs local POST. All previous keyboard entered settings (e.g., volume level and display contrast) are maintained.
2	Remote Control & Display Unit (RCDU)	Restarts the CDU. Performs local POST. All previous keyboard entered settings (e.g., volume level and display contrast) are maintained.
r	Receiver (Rcvr)	Restarts the receiver, aborting any current operations. Performs local POST. Restores frequency to 1680.00MHz and frequency control to manual.
s	Scanner (SAA)	Restarts the scanner. Performs local POST.

2.1.4 HOW TO INSTALL THE TRS FIRMWARE

The TRS firmware updated version (HEX file) is compiled by a vendor and provided to the government. Sites will upload any new firmware onto the respective TRS subsystem via a serial interface. It is installed by using the Offline Built-In-Test (OBIT) TRS Advanced Operations Utility (see Section 2.1.8).

2.1.5 INITIATE (x) FIRMWARE UPGRADE (U)

1. The Command: `/UxIcc<CR>` sets the station state where it will be ready to receive and process Intel Hex files for firmware upgrade (U) of the specified subsystem (x). The command details are given in Table 2-5.
2. A timeout on the reply to this command will occur in 5 seconds.

Reply: `OKcc<CR>`

3. The reply, `OKcc<CR>`, should occur if the command was successfully.

Table 2-5: Initiate (I) Firmware (F) Upgrade (U) Command

FIELD	DEFINITION
x	Target subsystem to be upgraded:
c	System Communications Assembly Microcontroller
m	Motion Control Unit Microcontroller
r	Receiver Microcontroller
1	Local Control Display Unit Microcontroller
2	Remote Control & Display Unit Microcontroller
cc	The ASCII representation of the hexadecimal value of a single-byte XOR-checksum of all the preceding characters

2.1.6 ADD FIRMWARE UPGRADE (U) INTEL HEX (H) LINE

Command: `/UxH:hhhhh.hhhhhhcc<CR>`

1. The command: `/UxH:hhhhh.hhhhhhcc<CR>` ends a single line of Intel Hex (H) format data to the station, for the upgrading of the firmware of the specified subsystem. The target subsystem is specified in x, (as indicated in Table 2-4) and should match that indicated in the Initiate Firmware Upgrade (U) command, detailed in Section 3.7.1, NWS EHB 9-725. The characters: `hhhhh.hhhhhh`, in the command denote an Intel Hex line, which may be variable in length but, with a maximum of 128 characters.
2. The Workstation should send all required Intel Hex line commands contiguously immediately following the Initiate Firmware Upgrade command (see Section 2.1.5). Any interspersed commands from the Workstation will abort the upgrade process.
3. A timeout on the reply to this command will occur in 5 seconds.
4. Reply: `OKcc<CR>`
A Reply: `OKcc<CR>` will be returned if the command was successfully executed.
5. The Program (P) Firmware Upgrade (U) Command: `/UxPhhhhhhhhcc<CR>` begins programming the received firmware upgrade into the specified subsystem. The target subsystem is specified in x (as indicated in Table 2-5), and should match that indicated in the Initiate Firmware Upgrade command and the Add Firmware Upgrade Inter Hex Line commands. `hhhhhhh` is the additive checksum of the ASCII value of each character (excluding non-printable characters) in the Intel Hex upgrade file.
6. The Workstation should send this command immediately following the last Add Firmware Upgrade Intel Hex Line command. Any interspersed commands from the Workstation will abort the upgrade process.
7. A timeout to this command will occur in 5 seconds.
8. The Reply: `OKcc<CR>`, occurs if the command is successfully received and programming has begun. `cc` is the ASCII representation of the hexadecimal value of a single-byte XOR-checksum of all the preceding characters. No further commands are serviced. The entire system performs a soft reset on completion of the programming of the firmware upgrade. The system should continue polling, as it did following the initial power-up, until it returns on-line. The firmware version of the upgraded subsystem can then be verified.

2.1.7 TRS FIRMWARE VERIFICATION AND DOWNLOAD PROCEDURES

2.1.7.1 Firmware/Software Verification

Use the OPS1 Web page (<https://www.ops1.nws.noaa.gov>) to verify the firmware/software is the most current version. The current firmware/software versions are listed on the OPS1 site.

1. Open *Internet Explorer* and go to the OPS1 Web page: <https://www.ops1.nws.noaa.gov/>.
2. Select ART, RRS, RSOIS, Wind Profiler.
3. Sign in with your NOAA e-mail username and password.
4. Select **What's New** and **RRS Software Status**. The current TRS Firmware versions available are listed.
5. Look under Telemetry Receiver System (TRS) Baseline Firmware to verify the firmware is the most current version.

2.1.7.2 TRS Firmware Download/Unzip Procedure from Web site

The actual TRS firmware programs are available on the OPS1 Web site as a zipped file and may be downloaded and unzipped. Use the following procedures to perform the download/unzip functions:

1. Under Telemetry Receiver System (TRS) Baseline Firmware, left click the selected .zip file, and select Save.
2. The Save As screen will appear and indicate the file will be saved to the Desktop. Click Save. A display screen will appear to indicate Download Complete.
3. After Save, unzip the file and store it on the desktop.
4. Repeat above steps for additional files to download and unzip, as necessary.
5. Close the OPS1 screen.

2.1.8 TRS FIRMWARE UPLOAD PROCEDURES USING OMS

Once downloaded and unzipped, these files can be uploaded from the RRS Workstation into the appropriate TRS equipment using RWS OMS (or a PC operating under *Windows XP*). Use the following sections for uploading TRS firmware:

1. Power **ON** the Workstation.
2. Log on to Microsoft Windows as RWS Site Administrator.
3. Double-click **RRS Offline Maintenance** Icon (Figure 2-2). The *RRS Offline Maintenance Menu* screen (Figure 2-3) will open.

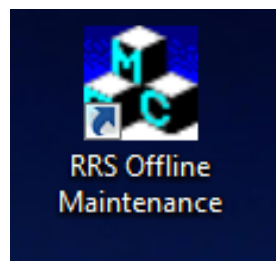


Figure 2-2: RRS Offline Maintenance Icon

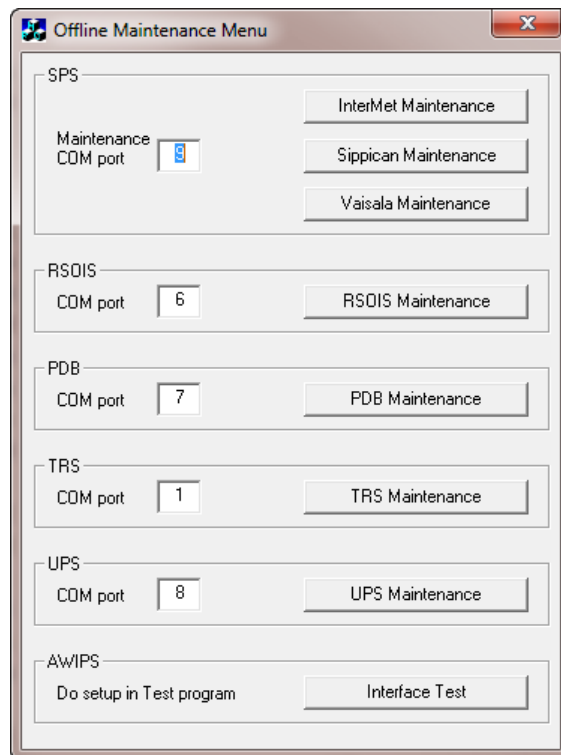


Figure 2-3: RRS Offline Maintenance Menu

4. Click **UPS Maintenance**. The *UPS Control* screen (Figure 2-4) will open.

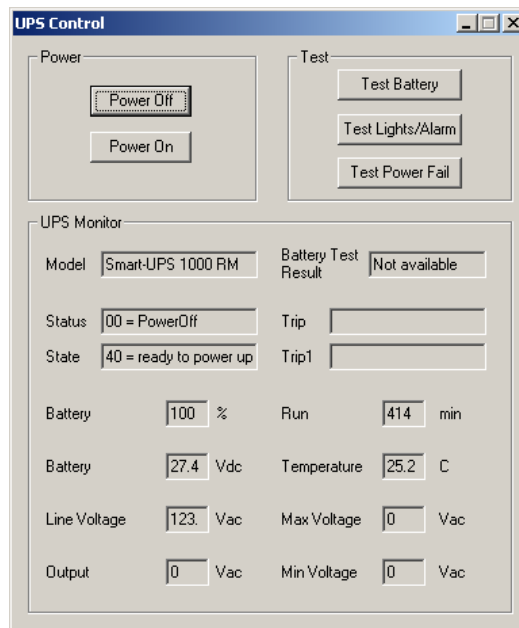


Figure 2-4: UPS Control Screen

- If the UPS Power is OFF (see the Status field in Figure 2-5), click the **Power ON** button. The CAUTION screen (Figure 2-5) will open.

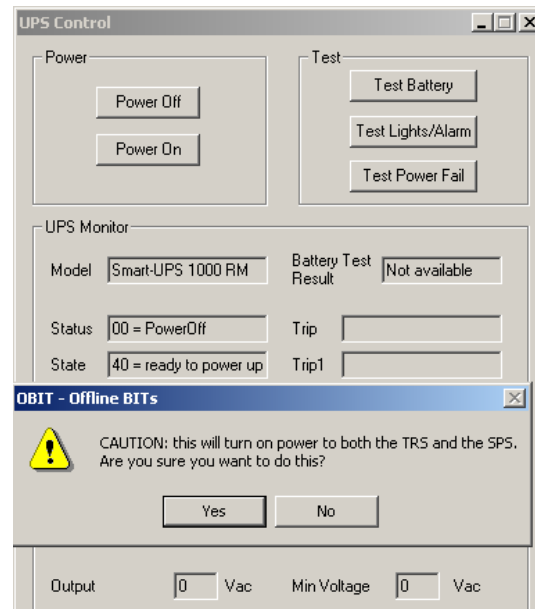


Figure 2-5: UPS Caution Screen

- Click Yes to turn on power. Allow UPS to initialize.
- Close the UPS Control menu. The OBIT - Offline BITs screen (Figure 2-6) will open.
- Exit the OBIT - Offline BITs screen, and the Offline Maintenance Menu (Figure 2-3) will appear.
- Click the **TRS Maintenance** button. The *OBIT - Offline BITs* screen (Figure 2-6) will open.

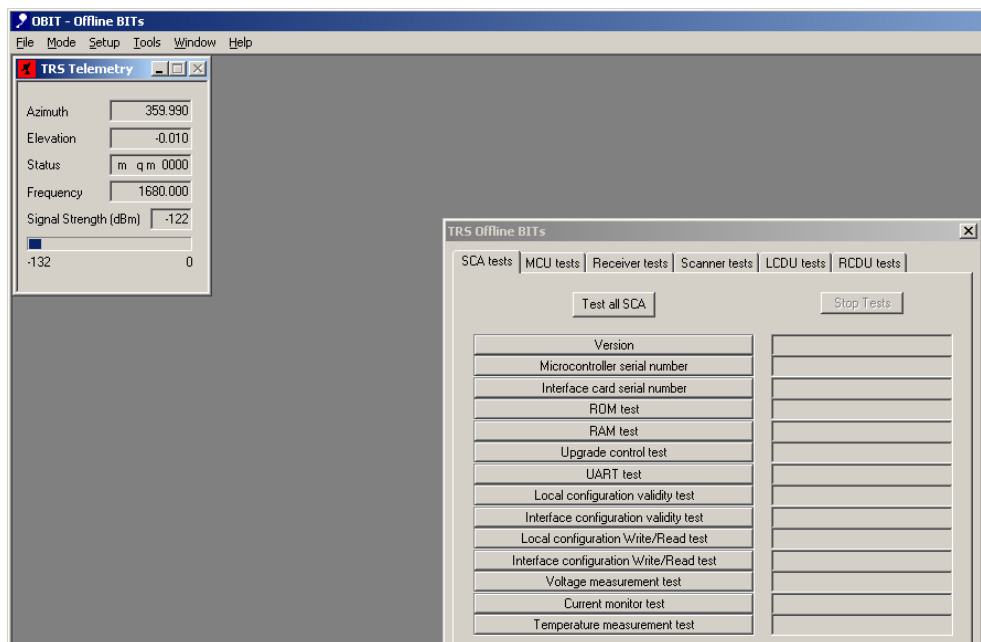


Figure 2-6: OBIT - Offline BITs Screen

10. Click **OBIT tools** (top of screen) menu, and select **TRS Advanced** option. The *TRS Advanced Operations* screen (Figure 2-7) will open.

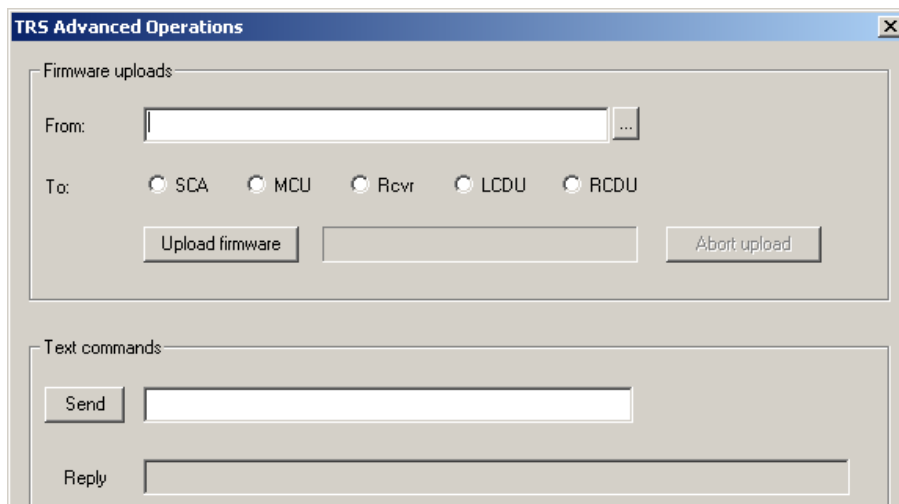


Figure 2-7: TRS Advanced Operations Screen

11. Changing firmware requires the specific TRS LRU processor to be in the test mode (tm). This is accomplished by the `/ixtm=1` command, where the x identifies the subsystem processor associated with the identifier (i) as listed in Table 2-6 (ictm=1 for the SCA, imtm=1 for the MCU, etc.)

Table 2-6: Subsystem Processor Identification

IDENTIFIER (i)	DEFINITION
x	Subsystem identifier:
c	System Communications Assembly Microcontroller
m	Motion Control Unit Microcontroller
1	Local Control Display Unit Microcontroller
2	Launch Control Display Unit Microcontroller
r	Receiver Microcontroller
s*	Scanner Microcontroller
* The Scanner is hard coded, and any change requires a formal ECP. The field is not authorized to install scanner firmware.	

12. Click the **From** menu button. The *Insert disk* window (Figure 2-8) will open the first time this procedure is done, and then the screen defaults to the *Open* menu.

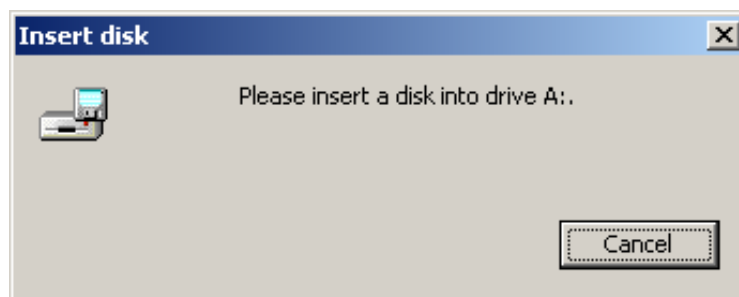


Figure 2-8: Insert Disk Window

13. Insert the TRS firmware disk (if available). If a CD is used to upload firmware, skip to Step 15.
14. If the Firmware Upload file is located at another source, click Cancel on the Insert disk screen and the *Open* screen (Figure 2-9) will display.

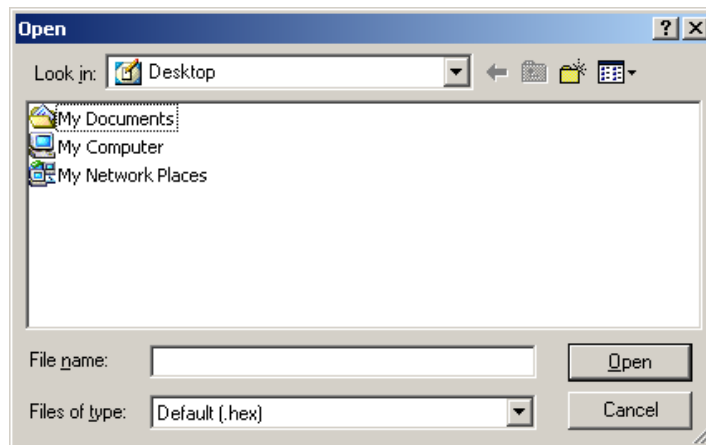


Figure 2-9: Open Screen

15. Select File location folder (where Firmware resides) from the desktop, “Look In” window menu.
16. Double-click the Folder containing latest version (LRU hex file extension).
17. Double-click hex file extension.
18. Select Subsystem (LRU) from Firmware Upload box. Figure 2-10 will appear.
19. Click **OK**.

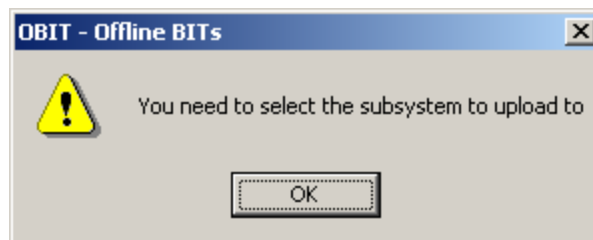


Figure 2-10: OBIT – Offline BITs, Select Subsystem Screen

20. Click the Upload Firmware button on the TRS Advanced Operations screen (Figure 2-7).

21. Click **Yes** on the *OBIT - Offline Bits* confirm screen (Figure 2-11).

NOTE: Confirm that the LRU Firmware requested in the TRS Advanced Operations menu is the same as the LRU Firmware in the *OBIT - Offline BITS* confirm screen.

CAUTION

Recheck the indicated file above for the subsystem that requires uploading. Damage to the requested LRU will result if the wrong LRU hex file is uploaded.

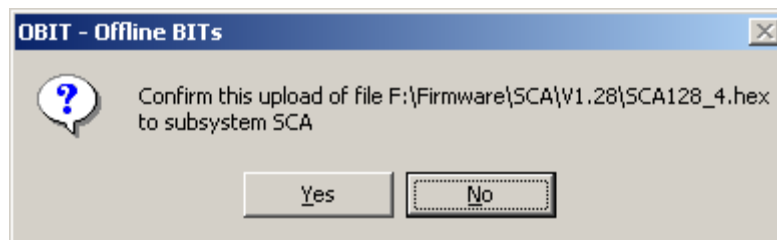


Figure 2-11: OBIT – Offline BITS Confirm Screen

22. Click Yes on the *Obit - Offline BITS Are You Sure* screen (Figure 2-12).

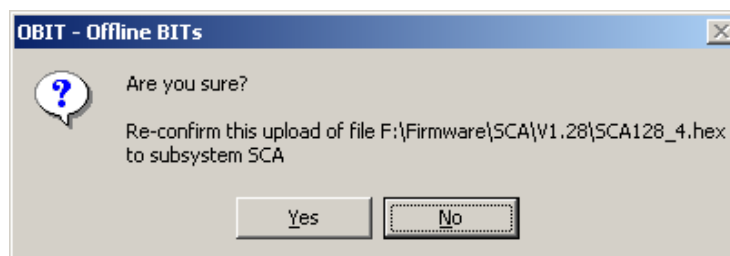


Figure 2-12: OBIT - Offline BITS Are You Sure Screen

23. Click **Yes** on the *OBIT - Offline BITS Last Chance* screen (Figure 2-13).

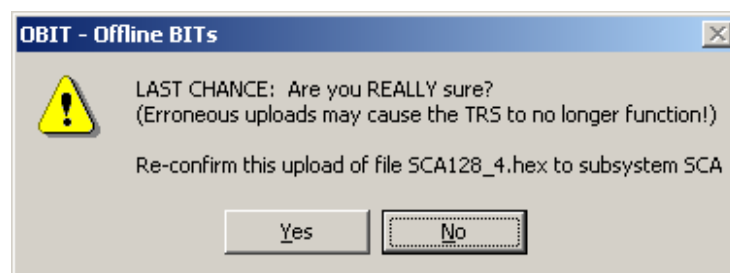


Figure 2-13: OBIT – Offline BITS LAST CHANCE Screen

24. The upload process will begin (Figure 2-14).

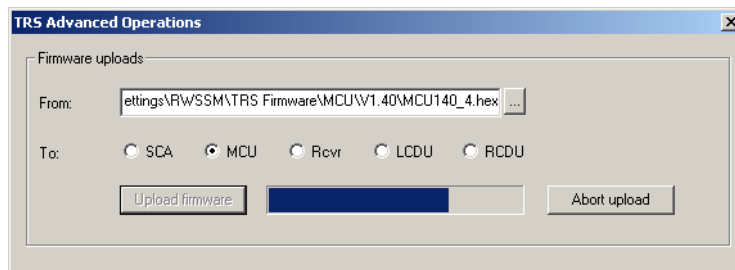


Figure 2-14: TRS Firmware Upload Process (Example)

NOTE: The upload process can be cancelled at any time prior to completion by clicking the **Abort Upload** button. If the Abort Upload button is activated at this time, the *Abort* screen will open (Figure 2-15).

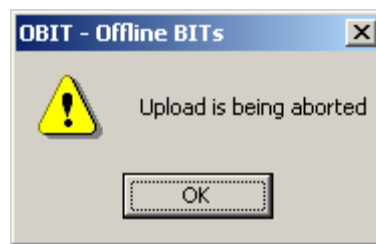


Figure 2-15: Upload is Being Aborted

25. If the Abort Upload button is not activated upload will continue and the *Upload done* screen (Figure 2-16) will appear. Click **OK** to initiate the installation of updated firmware.

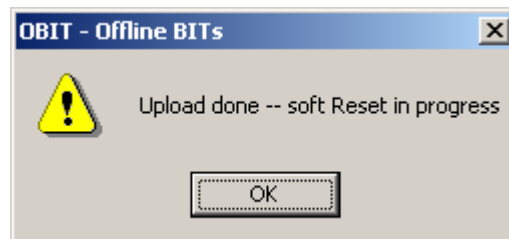


Figure 2-16: Upload Done

26. Click **OK** on the Figure 2-17 screen if version is accurate.

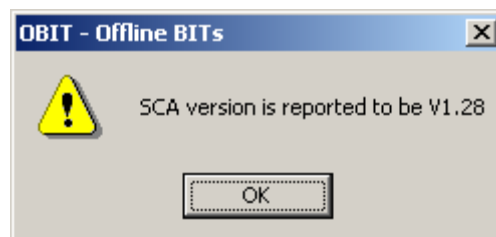


Figure 2-17: Subsystem Version Reported

27. When complete, the TRS Advanced Operations menu will open. For each subsystem, repeat steps as necessary.

28. Close all OBIT screens.

2.2 TRS COEFFICIENTS

2.2.1 SITE-SPECIFIC DATA

There is Site-specific Data stored in the TRS at the time of initial installation. These data consist of the information regarding the location of the TRS. The TRS stores this data in non-volatile memory for use every time it is powered up.

2.2.2 TRS LOCATION

The TRS tracking latitude, longitude, and altitude are used by the GPS receiver to compute the required Azimuth and Elevation angles required to direct the antenna to point to a specific GPS satellite in space.

Use the OMS procedures in NWS EHB 9-710, Section 2.5.1.1 to enter TRS location data.

2.2.3 OPERATIONAL DATA

Operational data consists of information required for the operation and performance of the TRS. Use the OMS procedures in NWS EHB 9-710, Section 2.5.2 to enter TRS operational data.

2.2.4 ADJUSTABLE FACTORY COEFFICIENTS

Coefficients are factory set and not required to be validated in the field. They will, however, be measured and recorded during installation. Coefficients are listed in NWS EHB 9-710, Table 2-6. Adjustable coefficients are marked with italics.

Enter adjustable coefficients into the TRS using the OMS. Entry procedures are found in NWS EHB 9-710, Section 2.5.3.

2.3 CALIBRATION

See Telemetry Receiver System, NWS EHB 9-710, Section 2.5.4.

2.4 OFFLINE BUILT-IN-TEST

See Telemetry Receiver System, NWS EHB 9-710, Section 2.5.5.

CHAPTER 3 - SIPPICAN SPS SYSTEM ADMINISTRATION

Sippican LMS-6 SPS

Sippican SPS hardware and software installation uses the following documentation (all notes are available on the OPS1 Web site: <https://www.ops1.nws.noaa.gov/>):

- Hardware installation for the Sippican LMS-6 SPS is contained in NWS EHB 9-715.
- Software installation for the Sippican LMS-6 SPS is contained in RRS Software Note 15.
- LMS-6 document 9019-107, Rev H, Software User Manual for SPS Software V4.8.0 provides information on software operations and fault isolation.
- Sippican SPS Software V4.8.0 for the LMS-6 is available on the OPS1 Web site: https://www.ops1.nws.noaa.gov/Secure/rrs_software.htm.

NOTE: Vaisala RS92-NGP SPS: Hardware installation for the Vaisala SPS 321AG (used to support the RS92-NGP radiosonde) is contained in RRS Modification Note 8. Modification Note 8 is available on the OPS1 Web site: <https://www.ops1.nws.noaa.gov/>.

Software installation for the Vaisala SPS 321AG is contained in Vaisala Manual M211417EN-D, dated April 2012. This manual supports the RS92-NGP Radiosonde and is available on the OPS1 Web site: <https://www.ops1.nws.noaa.gov/>.

The Vaisala SPS Software Version 1.0.4 is available on the OPS1 Web site: https://www.ops1.nws.noaa.gov/Secure/rrs_software.htm.

3.1 SIPPICAN SPS INTRODUCTION

The LMS-6 Signal Processing System (SPS) provides baseband conversion of the modulation on the Intermediate Frequency (IF) input. This baseband data is provided to the processor within the SPS. The GPS receiver provides the reference position and velocity data to the processor within the SPS. The processor within the SPS converts the radiosonde telemetry and differential GPS reference data into meteorological data and provides it to the RWS software.

The SPS Software runs on the Sippican RRS SPS and performs all functions required by the SPS including processing radiosonde data, controlling the GPS receiver, communicating with the RRS Workstation, and with the maintenance computer. The SPS Software Installation Diskette contains a file to be downloaded to the Sippican RRS SPS plus programs that run on the maintenance computer to perform the download.

The SPS software runs under the DR-DOS operating system on the solid state hard drive of the SPS. The primary program of the SPS software is the RRSSPS.EXE program which performs the serial I/O required for the radiosonde and local GPS receiver data collection, the RRS Workstation communications and the maintenance communications. It also performs the sensor based pressure, temperature, and humidity (PTU) calculations and wind smoothing. A separate program, GPSWIND.EXE, runs as a child process of the RRS SPS program, performing the GPS wind calculations. The GPS, height based, derived pressure is calculated by a third program, GPSPRESS.EXE, which also runs as a child process. These three programs communicate primarily by Expanded Memory Specification (EMS). Several other programs perform the necessary EMS allocation and clean up. SPS software download is performed by separate programs that recognize the download condition, receive the download and report the status of the software install.

The SPS software is coded in the C programming language and uses C compilers from Borland and Microsoft. It also includes serial communication and file transfer code from SysFire LLC.

3.1.1 SPS HARDWARE REQUIREMENTS

To install the SPS and connect all of the interfaces to the SPS, please follow the instructions listed in NWS EHB 9-715, Chapter 4. This procedure assumes that the TRS antenna hardware, including the communications equipment, has been installed and checked out.

3.1.2 SPS SOFTWARE VERIFICATION AND DOWNLOAD PROCEDURES

The SPS Operating Software is updated and compiled into a HEX file by the vendor. Each site is responsible for verifying the version and, if necessary, uploading the latest software versions onto the SPS.

3.1.3 SPS SOFTWARE VERIFICATION

Use the OPS1 Web page (<https://www.ops1.nws.noaa.gov/>) to verify that the SPS operating software is the most current version. The current certified software version for the LMS-6 (and MkIIA) radiosonde is V4.8.0 and is listed on the OPS1 Web site.

1. Identify and record the operating software on the SPS Assembly (see Section 3.3.2).
2. Open *Internet Explorer* and go to the OPS1 Web page: <https://www.ops1.nws.noaa.gov/> for a listing of the current SPS operating software version.
3. Select **ART, RRS, RSOIS, Wind Profiler**.
4. Sign in with your NOAA e-mail username and password.
5. Select **What's New** and **RRS Software Status**. The current software versions are listed.
6. Look under Sippican Signal Processing System (SPS) Software Versions to verify that the SPS software is the most current version.

3.1.4 FIRMWARE/SOFTWARE DOWNLOAD PROCEDURE

The actual SPS operating software is also available on the OPS1 Web site as a zipped file that, if necessary, needs to be downloaded to your computer and unzipped. Use the following procedures to perform the download/unzip functions:

1. Under Sippican Signal Processing System (SPS) Software Versions, left-click the selected .zip file and select **Save**.
2. The Save As screen will appear and indicates the file will be saved to the desktop. Click **Save**. A display screen will appear to indicate Download Complete.
3. After Save, unzip the file and store it on the desktop.
4. Copy the software from the RRS Workstation to a floppy drive, CD, or USB (external hard) drive.
5. Close the OPS1 screen.
6. See the following section for software upload/installation.

3.2 SIPPICAN SPS OPERATING SOFTWARE - INSTALLATION

A laptop computer running *Windows XP* is required to install the SPS software. This PC must have a serial port (with a 9-pin D-connector) configurable as COM1. Use the following instructions for installing the SPS software:

1. Go to the radome.
2. Turn off the SPS (power switch on the back of the SPS Assembly).
3. With the PC and SPS power turned off, disconnect the SPS-RWS Maintenance cable (J700-1A3A7-1W3-A) from the SPS.
4. Connect the PC serial port 1 to the maintenance port of the SPS Assembly using the SPS Maintenance PC serial cable (Sippican P/N: 9019-012 or ASN: J700-1A3A7-1W4).

NOTE: If *Windows XP* is installed on the PC, it will attempt to load drivers for new hardware identified, i.e. a second mouse. If allowed to load drivers it may significantly slow down the SPS software installation process.

5. Switch the SPS Download Switch to the **DOWNLOAD** position (the up position).
6. Turn on the PC and allow it to boot up.
7. Insert a CD or USB drive into the PC.
8. Double-click **My Computer** on the desktop. Double-click on the drive with the updated folder.
9. Double-click on the folder. Double-click on **INSTALL.BAT** or **INSTALL** (if file extensions are hidden). Immediately after executing the INSTALL.BAT file, turn on the SPS (power switch on the back of the SPS Assembly).
10. The download and installation of the SPS operating software may take 30 minutes or longer to complete. Progress is reported on the PC by the following statements:

NOTE: Watch the progress screen closely as download nears completion. Items (3) and (4) flash by and the screen closes quickly.

(1)File download in progress.

(2)Sending block #___bytes sent___of___error count:___.

(3)File download successful.

(4)SPS Software Update Complete. Please reset SPS with download switch disabled.

The error count indicates how many attempts to transfer a data block have failed. When a data block transfer fails, the block transfer is attempted again. There may be several errors and still have a successful download. More than ten errors may indicate a download problem. You can continue, but you may want to stop the download and delete new drivers added by windows. If stopped, restart the installation process from previous Step 9.

NOTE: If the progress screen closes, you can assume the SPS software was updated successfully, even if you missed the message that the Software Update was complete.

11. When SPS Software Update Complete... appears, turn off the SPS (power switch on the back of the SPS) and switch the SPS Download switch to the middle position.

12. Disconnect the SPS Maintenance PC Serial Cable (J700-1A3A7-1W4) from the SPS.
Reconnect the SPS-RWS Maintenance cable (J700-1A3A7-1W3-A). Shut down the PC.
13. Turn the SPS back on (power switch in the back of the SPS).

3.3 SIPPICAN SPS SYSTEM INTEGRATION CHECKOUT

Use the following procedures to verify the SPS software has been updated.

3.3.1 VERIFY PTU AND WIND DATA AVAILABILITY

Test of the SPS Software consists of the following:

1. If not already on, start the RWS software and begin operations for live upper-air-sounding and power up the TRS by turning on the UPS via RWS Hardware Status screen.
2. Prepare a radiosonde in accordance with the step-by-step radiosonde preparation procedure, except do not connect it to a balloon.
3. Set the TRS frequency to the radiosonde frequency, and engage the AFC function.
4. Using the TRS antenna controller, slew the antenna to maximize the radiosonde signal. Engage the auto-tracking function.
5. Verify that the RWS communicates with the SPS and the TRS antenna, and the SPS is providing PTU and Winds data.

3.3.2 SPS OPERATING SYSTEM VERSION AND SOFTWARE VERIFICATION

After data has been verified as available, terminate the RWS software, and inspect the sps.log file on the RWS computer to verify that the SPS software is the latest version (V4.8.0).

1. Use *Windows Explorer* and go to C:\RWS\RWS\LOGS and open **sps.log**.
2. Use CTRL-F to open the “Find” dialog box, and enter “SPS_SOFTWARE_REV:”, then press the Find Next button.
3. Confirm the software version is correct.

3.4 DELETE SIPPICAN SPS FILES FROM RWS

Delete SPS folders from the RWS desktop.

This completes Sippican SPS operating software installation.

CHAPTER 4 - RSOIS SYSTEM ADMINISTRATION

4.1 RSOIS SYSTEM INTERFACES

The Radiosonde Surface Observing Instrumentation System (RSOIS) is configured to interface with, be controlled by, and display data on the RRS Workstation. An RS-232 maintenance interface in the Remote Processor Unit (RPU) connects to the maintenance technician's personal computer. Standard communication interface software is used to communicate with the system and to receive broadcasted data. The communication interface software can be any software independent of the operating system, and capable of receiving ASCII. Packages compatible with a DOS or Windows environment include: ProComm, HyperTerminal (included with Windows), and Reflections. Apple and UNIX-based systems can also receive ASCII text.

4.2 TERMINAL COMMUNICATIONS AND DISPLAYS

4.2.1 TERMINAL COMMUNICATION INTERFACE SOFTWARE

Terminal communications with the RPU or Base Station via a computer require the installation and setup of terminal communication interface software such as PuTTY, HyperTerminal or ProComm. PuTTY is the preferred method, and can be easily installed by the ESA. However if HyperTerminal is desired, use the following procedure to set it up:

1. To open and setup HyperTerminal, go to: Start; All programs; Accessories; Communications; and HyperTerminal.
2. In the HyperTerminal folder, double-click HyperTerminal to bring up HyperTerminal.
3. In HyperTerminal, under Connection Description (Figure 4-1), enter a name (example: RPU# 1727) and click **OK**.

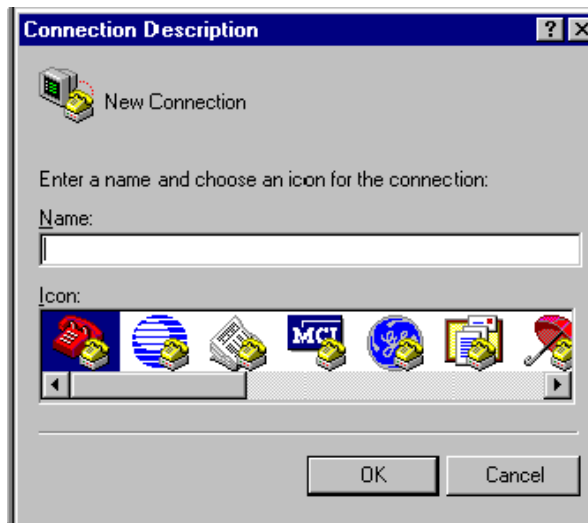


Figure 4-1: Connection Description Screen

4. In *Connect to* (Figure 4-2), select **COM1** from the *Connect To* screen using scroll-down menu and click **OK**.



Figure 4-2 Connect To Screen

5. Under *COM1 Properties* (Figure 4-3), set Port Settings as follow: Bits per second: **9600**, Data bits: **8**, Parity: **None**, Stop bit: **1**, and Flow control: **None**. Click **OK**.

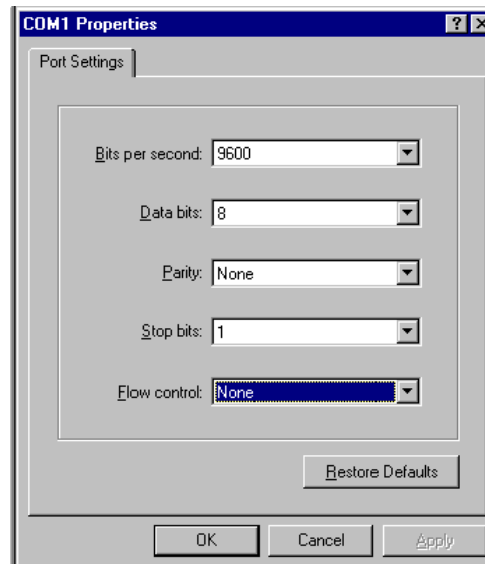


Figure 4-3: COM 1 Properties Screen

6. To install and setup ProComm. Obtain ProComm Version 4.7 (S100-TE318-2) from NLSC and follow the instructions in RSOIS Manual NWS EHB 9-201, Appendix D.

4.2.2 TERMINAL COMMUNICATION METHODS

Two-way communications with the RSOIS RPU can be established using any one of the following three ways:

- Connect the RS-232 technician's cable (supplied with the RPU) between the "COM3" port of the Zeno ® 3200 data logger and the serial port of a personal computer.
- Connect a fiber optic cable between the RPU fiber optic modem and the Workstation fiber optic modem, then using RS-232C, DB-9, DTE serial cable connected between Workstation modem and the serial port of the Workstation.

- Using the Base Station, connect the terminal cable (supplied with the Base Station) from the COM port of the Base Station to the serial port of the Workstation.

The use of one terminal communication method does not preclude the use of another at the same time. Thus, if a Workstation is receiving RPU data via fiber optic cable and a Base Station is subsequently powered up, both can simultaneously receive data from the RPU without any interference or interruption in data transmission.

4.2.3 TERMINAL COMMUNICATION INTERFACE SOFTWARE DATA DISPLAY

The format in which the data output messages from the RPU are displayed when using terminal communication interface software is shown in the example below. The RPU data output message fields include the current date, time, wind, temperature, dew point, and humidity at the RPU installation site as well as a built-in-test (BIT) message to alert the operator at the Workstation of any abnormal operating conditions at the RPU (see Table 4-1).

```
#05110011
03/06/21,14:00:00,11,5,252,0,9,0,23.8,11.1,44,0,0,0,43
#05110011
03/06/21,14:00:05,11,6,250,0,9,0,23.8,11.1,44,0,0,0,45
```

Table 4-1: RPU Data Output Message Field Identification

#SIDPID	YY/MM/DD	hh:mm:ss	ID	SP	WD	WC	PK	PK*	AT	DP	RH	GU	GU*	BIT	CHKSM
#05110011	03/06/21	14:00:00	11	5	252	0	9	0	23.8	11.1	44	0	0	0	43
DEFINITIONS:															
#SIDPID:	Combined four digits RPU Secondary Identification Number and four digits RPU Primary Identification Number (i.e. #05110011).														
YY/MM/DD:	Two digit year, month, and day.														
hh:mm:ss:	Two-digit hour, minute, and second (in UTC time).														
ID:	RPU Primary Identification Number.														
SP:	Current 2-minute average wind speed in knots ($\pm 3\%$).														
WD:	Current 2-minute average wind direction in degrees ($\pm 2^\circ$).														
WC:	0 = Steady WD, 1 = Variable WD.														
PK:	The maximum 5 second wind speed in the last 2 minutes.														
PK*:	1 = The PK > 24 knots; indicates a possible NWS reportable peak wind speed (Alert Condition).														
AT:	Current 5-minute average ambient temperature in degrees Celsius ($\pm 0.2^\circ\text{C}$).														
DP:	Current 5 minute average dew point temperature in degrees Celsius ($\pm 2.0^\circ\text{C}$).														
RH:	Current 5 minute average relative humidity by percent ($\pm 3\%$).														
GU:	Maximum gust wind speed in the last 10 minutes. Set if the SP > 8 knots AND if the difference in the recorded maximum and minimum wind speed in the last ten minutes is > 9 knots AND if the difference in the recorded maximum wind speed in the last ten minutes and SP > 4 knots. Once set, the GU continues to be reported for at least a 10 minute duration unless the difference in the recorded maximum wind speed in the last 10 minutes and SP > 2 knots.														
GU*:	1 = The SP > 19 knots AND the current SP > the SP two minutes ago +14 knots; indicates a possible squall condition (Alert Condition).														
BIT:	Hexadecimal built-in-test (BIT) message.														
CHKSM:	Integer checksum value.														

4.3 RSOIS SOFTWARE VERIFICATION, DOWNLOAD, AND INSTALLATION

The RSOIS Data Display Software is updated and compiled into a HEX file by the vendor. Each site is responsible for verifying the version and, if necessary, uploading the latest firmware versions. This section provides instructions on the back-up, download, and upload of the revised RSOIS RPU configuration files.

4.3.1 RSOIS SOFTWARE/FIRMWARE VERIFICATION

1. First, identify and record the software/firmware that is on your RSOIS. Use the RWS computer to open *Internet Explorer* and go to the OPS1 Web page: <https://www.ops1.nws.noaa.gov/> for a listing of current software/firmware versions.
2. Select **ART, RRS, RSOIS, Wind Profiler**.
3. Sign in with NOAA e-mail username and password.
4. Under *RRS Software*, select **RRS Software Status**. Look under RSOIS Software Versions to verify that the programs that you now have are the most current versions available.

4.3.2 RPU CONFIGURATION FILE BACK-UP PROCEDURE

NOTE: Detailed configuration file back-up information is located in NWS EHB 9-201, Appendix F, Section F-1. A summary of RSOIS upload procedures follow:

The purpose of this section is to save a back-up copy of the current RPU Config File for protection until the new Config File is successfully loaded and operating.

1. Turn on the RWS computer in the upper air office.

NOTE: If fiber optic communications to the RPU are not available, take a PC to the RSOIS field site and perform the back-up function directly on the RPU. The Base Station's terminal pass-through mode is **not** to be used to back up the RPU configuration.

2. Start OBIT with the RWS Program turned on.
3. Use the *Offline Maintenance Menu* to get the device/port assignment. (If OBIT is run directly without the RWS Program being active, only the internal simulator will operate.)
4. Select **Close** on the RWS Program (without Exiting RWS and without turning off the UPS).
5. Click the desktop "RRS Offline Menu" icon. The Offline Maintenance Menu screen will appear.
6. Select **RSOIS Maintenance**. Once the RSOIS test program is started, it will display a HyperTerminal view of the RSOIS port in a window format.
7. Type **u** and press **Enter** to display the *User Menu*.
8. Type **Z** and press **Enter**.
9. At the prompt: Enter Administrator Password: Type **zeno** then press **Enter** to display the *ZENO Program Menu*.
10. Type **L** and press **Enter** to display the *System Load Menu*.
11. Type **t** and press **Enter**.

NOTE: DO NOT FOLLOW SCREEN INSTRUCTIONS (i.e., DO NOT “Enter Any Key to Continue.”).

12. Go to **Transfer; Capture Text**. This step is to capture (copy) the current (superseded) RPU configuration file to the RWS hard drive for temporary backup purposes only.
13. Select **Temporary** folder, type **RPUxx.CFG** as the file name, and click **Start**.
14. Press Enter. This step saves and displays the current (old) config file.
15. Go to **Transfer; Capture Text**; and click **Stop** to turn off Capture Text.
16. Press **Enter** to return to the *System Load Menu*.
17. Type **z** (space) **q** and press **Enter** to exit the *ZENO Program Menu* and the *User Interface*.

4.3.3 SOFTWARE DOWNLOAD/UNZIP PROCEDURE FROM WEB SITE

The actual software/firmware programs are also available on the OPS1 site as zipped files that need to be downloaded to the computer and unzipped. Use the following procedures to perform the download/unzip functions:

1. Open *Internet Explorer* and go to the OPS1 Web page, <https://www.ops1.nws.noaa.gov/> for a list of current software/firmware versions.
2. Select **ART, RRS, RSOIS, Wind Profiler**.
3. Sign in with NOAA e-mail username and password.
4. Under *RRS Software*, select **RRS Software Status**. Look under RSOIS Software Versions.
5. Left-click the selected .zip file, and select **Save**.
6. The *Save As* screen will appear and indicate the file will be saved to the Desktop. Click **Save**. A display screen will appear and indicate Download Complete.
7. After the Save process, unzip and store it on the Desktop.
8. Close the OPS1 screen.

4.3.4 RPU CONFIGURATION FILE UPLOAD PROCEDURE

NOTE: To install the RSOIS program, execute the SETUP.EXE file. Installation of both the server and client programs on the same computer is not necessary; installation of one or the other is strictly dependent upon the server or client designation of the particular computer.

NOTE: Detailed installation and configuration setup information is located in NWS EHB 9-201, Appendix F. A summary of RSOIS upload procedures follow.

Following the download of the new configuration file, perform upload of the new configuration file using the RWS.

NOTE: The new file will overwrite the current (old) Zeno RPU configuration file.

1. Start OBIT with the RWS Program turned on.
2. Use the *Offline Maintenance Menu* to get the device/port assignment. (If OBIT is run directly without the RWS Program being active, only the internal simulator will operate.)
3. Select **Close** on the RWS Program (without exiting RWS and without turning off the UPS).
4. Double-click the desktop **RRS Offline Maintenance** icon. The *Offline Maintenance Menu* screen will appear.
5. Select **RSOIS Maintenance**. Once the RSOIS test program is started, it will display a HyperTerminal view of the RSOIS port in a window format.
6. Type **u** and press **Enter** to display the *User Menu*.
7. Type **z** and press **Enter**.
8. Type **L** and press **Enter** to display the *System Load Menu*.
9. Type **xr** and press **Enter**.
10. Type **y** and press **Enter**.
11. Go to **Transfer; Send File**. Click on the **RWS Desktop** to find the new configuration file. Click **Open**.
12. Once the file has been selected, click **Send** to begin the upload.
13. Type **z** and press **Enter** to display the *Zeno Program Menu*.
14. Type **u** and press **Enter** to display the *User Menu*.
15. Type **f** and press **Enter** to display the *System Function Menu*.

NOTE: Be sure to change the Primary ID and the Secondary ID after uploading the files onto the RPU. The Primary ID number on the RPU consists of two numbers and the Secondary ID number consists of three numbers (i.e., Primary ID: 13; Secondary ID: 513)

16. Type **c1/xx** (space) **c2/yyy**, and press **Enter** to change the Primary and Secondary Unit ID numbers.

NOTE: **xx** is the site-specific Primary RPU ID number and **yyy** is the site-specific Secondary RPU ID number. A label identifying the Primary and Secondary ID number of each RPU is located inside the RPU enclosure door. In this example, 13 was entered as the Primary ID number and 513 was entered as the Secondary ID number.

17. Type **u** and press **Enter** to display the *User Menu*.
18. Type **z** and press **Enter** to display the *ZENO Program Menu*.
19. Type **e** and press **Enter** to save Parameters to EEPROM.
20. Type **q** and press **Enter** to exit the *User Interface*.

This completes the installation of the new RSOIS RPU configuration file.